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Vaccination and the Decline in Paralytic Poliomyelitis[1]

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THE pattern of wide variation in the annual incidence of paralytic poliomyelitis is evident in the years since 1950, which have seen a remarkable rise and decline in this unpredictable disease. Commencing with 284 cases in 1950, paralytic poliomyelitis increased year by year to the all-time peak of 3,691 cases in 1953, and then declined progressively to 368 cases in 1956 (Figure 1).

The protective effect of poliomyelitis vaccine in preventing the paralytic complications of poliomyelitis under field conditions was first demonstrated in the well-known Francis Report of the American Field Trial of 1954. Numerous subsequent comparisons of paralytic attack rates in groups of vaccinated and unvaccinated children of comparable ages, including our experience with the Canadian vaccination program of 1955, have confirmed this reduction in paralytic cases effected by the vaccine. The Canadian vaccination program commenced in April, 1955, and by the beginning of the 1956 poliomyelitis "season", some 1,800,000 children had been vaccinated, 90 per cent of whom had received 2 or more doses of vaccine. In general, the majority of vaccinations were to be found at that time in children of primary school age, although in some provinces vaccinations had been extended as well to pre-school children and to older children of school age. It will be recalled that comparatively few vaccinations were carried out during the summer of 1956.

Knowing that vaccination confers significant protection against paralytic attack, but realizing that poliomyelitis is a disease of wide annual fluctuation, it has been felt desirable to examine the part that vaccination of this large segment of the younger population may have contributed to the decline in incidence experienced during 1955 and 1956. Sabin (1) has shown that sub-

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clinical infection can occur in those who have received formalinized vaccine, and Gelfand, Fox and LeBlanc (2) have demonstrated that two doses of Salk vaccine do not materially influence the frequency and duration of alimentary infection, or the amount of virus excreted in the faeces. Thus a killed virus vaccine alone may be expected to have little effect on the dissemination of poliomyelitis virus in nature, so that it can be anticipated, therefore, that vaccination will not affect the incidence of paralytic poliomyelitis in the unvaccinated population; its protective effects will be seen only in the age-groups receiving the vaccine. Because of this selective effect of the vaccine, it can be expected that a decreasing proportion of all paralytic poliomyelitis will be found in the vaccinated ages resulting in a modification of the age-distribution pattern of paralytic poliomyelitis seen in pre-vaccination years. It is of interest, therefore, to examine and compare the age-distribution pattern of paralytic poliomyelitis for the pre-vaccination years, 1952–54, with post-vaccination years, 1955–56, for evidence of these effects. With the co-operation and assistance of provincial communicable disease control directors and epidemiologists incidence figures of paralytic poliomyelitis by age have been assembled for this purpose.

Age-specific Paralytic Attack Rates

It is of interest first to examine these rates over a number of years for evidence of changes that may have occurred between pre-vaccination and post-vaccination years. Figure 2 shows paralytic attack rates per 100,000 population by 5-year age-groups for individual years from 1952 to 1956, plotted on a semi-logarithm scale. It will be observed that although the magnitude of the rates varies, the curves for each of the pre-vaccination years 1952 to 1954 are roughly the same, in that rates rise to a peak at ages 5–9 and then decline gradually with age. An examination of the curves for the post-vaccination years 1955 and 1956 shows a similar pattern except that the rate of maximum incidence observed in the pre-vaccination years at ages 5–9 has been displaced to the pre-school age-group in these years. The pronounced instability seen in the curve for 1956 can probably be explained by the small number of cases experienced in that year.

The percentage distribution of paralytic poliomyelitis in pre-vaccination years 1952–54 is compared with post-vaccination years 1955–56, by single year of age up to age 14 and by 5-year age-groups from 15 years upward (Fig. 3). In the pre-vaccination years, the maximum distribution of paralytic poliomyelitis cases occurred in the older pre-school and younger school ages, followed by a gradual decline with age, while in the 1955–56 picture, the relative deficiency in the proportion of cases occurring at ages 5 to 10 is apparent.

Focusing attention upon individual years at the extremes of the period under consideration, a comparison of the percentage distribution of paralytic poliomyelitis by 5-year age-groups in the pre-vaccination year 1952 and post-vaccination year 1956 shows a similar picture (Fig. 4). In the former, the peak distribution at ages 5 to 9, followed by a gradual decline with age is evident. When the 1956 distribution is examined, the relative reduction

FIG. 1. Paralytic Poliomyelitis, Reported Annual Incidence 1950–56, Canada.

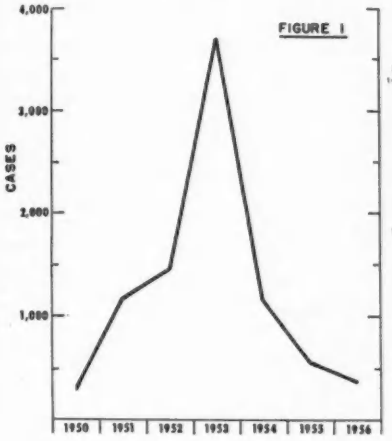


FIG. 2. Paralytic Poliomyelitis 1952–56 rates per 100,000 population for specified age-groups, Canada (8 provinces).

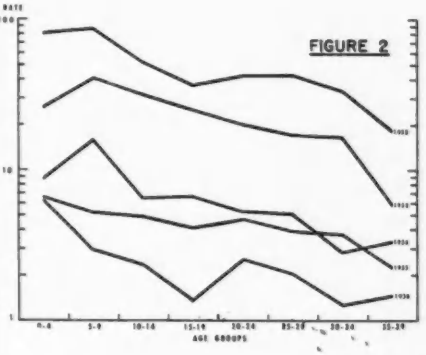


FIG. 3. Paralytic Poliomyelitis Percentage Distribution for Specified Ages 1952–54 and 1955–56, Canada (8 provinces).

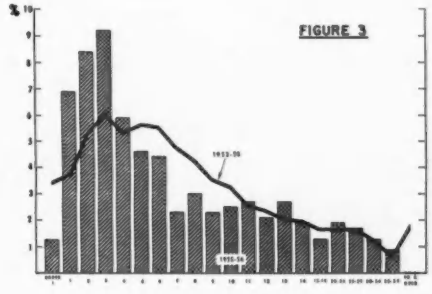
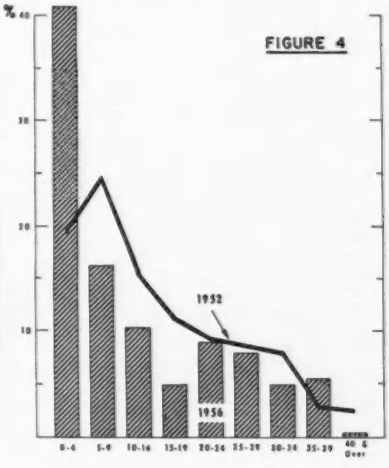


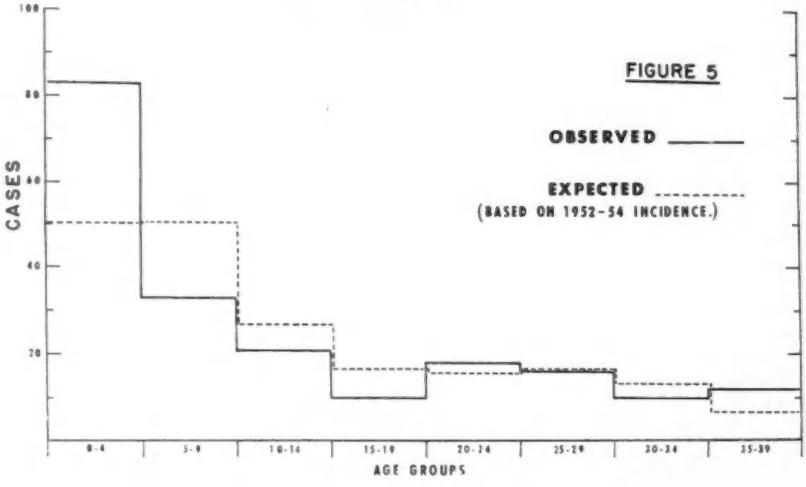
FIG. 4. Paralytic Poliomyelitis Percentage Distribution for Specified Ages 1952 and 1956, Canada (8 provinces).



previously seen in the proportion of cases occurring in the school ages is again apparent. The relatively larger proportion of cases in age-group 0–4 will be noted.

The marked reduction in the decline in the over-all incidence of paralytic poliomyelitis since the pre-vaccination years has been previously mentioned. If it can be assumed that without vaccination this decrease would have occurred equally at all age-groups, it is possible to calculate an expected incidence in 1956 by applying adjusted age-specific rates for the years 1952–54 to the appropriate 1956 population of each age-group. Figure 5 compares the expected incidence calculated by this means, with the incidence observed in 1956 by 5-year age-groups. It will be seen that more cases occurred in 1956 in the 0–4 age-group than might have been expected, while the expected and observed numbers of cases at ages 20 and over are much the same. However, a consistent deficiency in observed cases as compared with the numbers expected is seen throughout ages 5 to 19 years.

FIG. 5. Paralytic Poliomyelitis 1956 Observed and Expected Incidence for Selected Ages, Canada (8 provinces).



SUMMARY

It would appear that in addition to the over-all decline in paralytic poliomyelitis seen in recent years at all ages and in each age-group, there has also been a selective reduction in paralytic poliomyelitis in the school ages since 1955. This has been demonstrated by a reduction in paralytic attack rates and in the proportion of all paralytic cases occurring in these age-groups to an extent greater than the experience of past years would lead one to expect. It will be recalled that at the beginning of the 1956 poliomyelitis "season", the main concentrations of vaccination were in the school years. Therefore, it would seem reasonable to infer that the relative lack of paralytic cases which has been demonstrated in the vaccinated ages is the reflection of the

protective effect of the vaccine program. In doing this, however, the possible "natural" immunizing effect of the epidemic year 1953 should not be overlooked. It will be of very considerable interest to follow the incidence of paralytic poliomyelitis over the next few years with the expectation that further changes in the age distribution pattern will parallel the progressive development of vaccination programs.

REFERENCES

1. Sabin, A. B.: Bull. New York Acad. Med., 1957, *33*: 17.
2. Gelfand, H. M., *et al.*: Am. J. Pub. Health, 1957, *47*: 421.

INDUSTRIAL HEALTH PROGRAMS

Industrial health programs suitable for the maintenance of employee health in large or small plants generally consist of the following ten procedures: preplacement medical examinations; confidential health records; first aid for the sick or injured; rehabilitation of the sick or injured; health education; sanitation; industrial hygiene; statistical studies of absenteeism due to sickness or injury; periodic medical examinations; adequate medical care in isolated regions. There is ample evidence that many management groups have health programs because they are helpful to their employees, even if costly. A listing of the benefits to be expected would include: reduction of injury and occupation disease rates; reduced compensation costs; lower costs of production; improved management-labour relations; better human relations; less absenteeism; reduced labour turnover; improved relationships with the general community. In the last analysis, management is merely another group of employees within the framework of the industrial concern and participates equally with other employees in the benefits of a health program.

A psychiatric approach to industrial personnel problems revealed, in the course of a survey, that 62% of the more than 4,000 cases observed reached the discharge status through traits of social incompetence rather than occupational incompetence. The conclusions were that dissatisfaction on the part of both the employer and the employee generally arose, not from the employee's inherent inability to do his work, but rather from his inability to adjust himself to the conditions under which he was to do the work. The solution to emotional problems in industry cannot be the exclusive province of management, medical department or personnel. It can only be met by closely-knit co-operation of all three.

Today, women comprise about 23% of the Canadian labour force and are playing a vital role in our current phenomenal industrial expansion. The conservation of the health of this very important group of workers presents a major challenge to industry and to medicine. The industrial physician can also help materially with the problems of the older worker and in the important field of accident prevention.

From an address to the Convention of Industrial Physicians in Hamilton by T. A. Rice, International Harvester of Canada, Hamilton, and past president of the Canadian Manufacturers' Association.

The Quest for Satisfactory Nursing[1]

E. KATHLEEN RUSSELL,[2] R.N.

I ASK you to consider my title, the quest for satisfactory nursing. This wording assumes that we do not have satisfactory nursing, or more exactly, that we have not enough of it. Accepting this statement, we face two questions: (1) what is satisfactory nursing; and (2) how is the community to get more of it.

The first question, then, asks for a description of satisfactory nursing. Is it not the provision and maintenance of enough good nursing for all the fields of work which have legitimate claim on our profession? Following this thought in a report that I wrote recently, I divided the content of nursing practice into four categories: (1) bedside care of the sick; (2) the administration of nursing services; (3) teaching and the research work which presses so insistently for attention; and (4) public health nursing. In listing the four categories we are dealing with indisputable facts, and stating these as concisely as possible. Yet public opinion frequently refuses to accept this spread of nursing practice. The usual critic recognizes one field of service only, namely, bedside care of the sick. This inadequate thought is so prevalent, even among nurses themselves, that we need to emphasize its devastating effect upon all serious effort to organize our services and to prepare practitioners for these services.

As we have said, bedside care of the sick is the one field of nursing practice that is recognized. Sometimes, this exclusive recognition smacks of glib smugness which avoids further inquiry into unsatisfactory conditions in that field itself. Since medical and hospital practice started their phenomenal expansion early in this century, bedside nursing care has not been able to keep pace. Medical developments and demands seem always to have been a step ahead of it. Public health nursing had a more even start and has suffered less from adverse circumstances. It is idle to try to assess the relative importance of the hospital nurse and the public health nurse. Both are essential. Theoretically, it may be of more service to mankind to prevent disease rather than to help cure it, but I have little interest in such academic argument. I have been the patient myself too often to minimize the profound importance of preparation and organization for satisfactory bedside care.

Curiously enough, the smuggest of the self-appointed defenders of bedside nursing fail to see that logic demands that they acknowledge the category of the nurse administrator. These reactionaries are fond of reference to Florence Nightingale but they fail to see that she herself, the great administrator, recognized the demand for able administration and realized that both bedside training and something more were needed to qualify this worker. From the

[1]Presented at the forty-fifth annual meeting, Canadian Public Health Association, Toronto, May 27–29, 1957.

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beginning, Miss Nightingale had a special group of lady probationers. The Victorian word displeases us now, but we understand that it indicated that these candidates for future administrative posts were picked from the better-educated class in society. The sheer necessity for these women of broader education was understood. Do we recognize this need or have we handicapped nursing because of our failure to understand?

Let us return to the broad spread of nursing practice described above as four-fold. Surely this poses a stiff educational problem. The basis of preparation for all of these fields cannot be left to chance, in spite of the fine optimism of some advisers. These nurses cannot be produced by one teaching procedure alone, i.e. good teaching at the bedside. In parenthesis, we ask how the community is going to obtain this good bedside teaching. Is it to fall like manna from heaven or are we going to have to work for it?

I have devoted much time to bedside care of the sick because it is so basic, so important and so puzzling, but it is time for me to note that this is not the field of nursing for which this morning's audience must take primary responsibility. This Association must plan for the care of the well, the near-well, or the potentially well, in other words for public health nursing. This preparation leads into much special content for the curriculum.

Can we save time by admitting that there is a difficult and perplexing task to be done in the field of nursing education? All professions are struggling with their educational problems today. Nursing is not alone in the struggle though we believe it is the only one being offered so much free and so much superficial advice.

The history of nursing education is interesting and could be instructive. The real effort started about 1900 and has been increasing ever since. During these fifty or more years, we have made many mistakes, and at times have been embarrassed equally by our own and our friends' inadequacies. A bad tradition has plagued us for many years. The crowning obstruction to progress has resulted from the fact that a so-called nursing school was a financial asset for the hospital.

Two special efforts have characterized nursing school development. One has been the pressure toward more and more recruitment of students for the schools. As long as it was considered that an ever larger number of nurses would cure many of our ills, high-powered recruitment campaigns absorbed an incredible amount of time and energy. A second characteristic during past years has been the determination to expand and patch the curriculum. It seemed the emphasis was placed upon quantity rather than quality. If lectures were good for nursing students, then let us have more lectures. These lectures were added not quite indiscriminately but some rather conglomerate collections were produced. There was some logical purpose underlying these efforts, but powerful forces were arrayed against nursing schools and the struggle was heart-breaking. Now, today's leaders have better opportunity to build on the pioneer efforts.

Recruitment is no longer the answer to our quest. One reason is that nursing seems to attract almost more than its share of the young womanhood of the

country. Everything must be done now to retain desirable candidates and to make better use of the number of nurses we have.

As for the curriculum, we are well past the stage of mere addition of new, to old, content. Instead of patchwork, all able leaders are demanding, and some obtaining, a reconstruction of the whole curriculum. The schools are concerned as much with method as with content. As we have said, the field of nursing practice has developed greatly and, therefore, the students must have broader preparation. This greater educational activity must be accomplished with more economy of time and effort than previously. For such a huge piece of community work, the leisurely wastefulness of the past, with its standard three-year training courses and its vast number of schools, will not be condoned. For the intelligent young nurses needed by modern medicine, modern hospitals, and modern public health practice, it appears that satisfactory *basic* preparation might be given in two years in real nursing schools, especially if an adequate internship year could be added, i.e. an internship that is controlled for educational values. At least the evidence points to this possibility.

In nursing practice and nursing education, we have reached the stage of inquiry and analysis. Nurses must be well prepared for present-day nursing, not for the type of practice of 50, or 40, or even 20 years ago. Nursing must concern itself now with 1957 and the immediate future. The foreseeable demands are plentiful, and these should be guides for present-day nursing education. Above all these demands, stand those that will result from the present health insurance proposals.

Perhaps the most important message I can bring today is the fact that our nursing leaders are not just drifting along with an uncritical attitude toward nursing practice and nursing education. Our associations have members, and, our schools have teaching staffs, prepared to give highly intelligent leadership to this work. There are women—and men also, we hope—who are capable of critical analysis and constructive action. They know something of sound educational procedure and are ready to apply their knowledge to the requirements of preparation for nursing. The supreme need of this moment is that all associated groups, medical men, and hospital, public health, and governmental authorities will recognize capable leadership and put all their power and authority behind these professional efforts. Our nursing problems must be solved by nurses with all the help their colleagues can give.

Summary

Since the beginning of the century medical and hospital practices have developed greatly. To these have been added a wide array of public health activities. At every turn the nurse's help is sought. The national scheme for health maintenance presents a new factor with power to add greatly to the demands for higher quality and quantity in nursing. The urgency is great and money will be spent. For all of this development we must turn to our nursing administrators. We need stateswomen who, first, are devoted nurses and who are capable of study, analysis and research. They must give the initial leadership. At least a few are ready, provided they are given support. An eminent

health authority, Professor Brotherston of the University of Edinburgh, speaks of the fact that nurses must ". . . train the leaders of the leaders . . . train the teachers of the future teachers . . . produce more of the nurse stateswomen whose word and wisdom is so urgently needed at the council tables at the very top of our health services". Finally, I would repeat something I wrote a short time ago. "Nursing education needs above all else two factors; first, teachers who are unusually well-educated women and who are also devoted nurses; and, secondly, the best of clinical teaching". Many of us are trying to provide these conditions for our schools.

Let me add a postscript. The preparation and organization of graduate nurses and nursing assistants do not present two separate activities. They are merely two parts of one whole and should not be disjoined the one from the other.

CANADIAN PUBLIC HEALTH ASSOCIATION

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The Control of Costs in a Prepaid Medical Care Plan[1]

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IN the present paper the costs of medical care will be discussed with special reference to the experience of Physicians' Services Incorporated (P.S.I.), a large prepaid medically sponsored plan in Ontario. These costs refer specifically to what is paid for the personal services of qualified medical personnel. It does not cover hospital care, drugs and dressings and various other items. The exact nature of P.S.I. services (3) (4) have been stated elsewhere.

As a background to the costs of medical care we have prepared graph I, which shows the relationship of the annual average net income of physicians in private practice in Canada to the population, the average weekly income of industrial workers and the gross national product, expressed per head of the population.

From table I it is clear that between 1930 and 1953 relative personal expenditures increased substantially for tobacco and alcohol and transportation. The other items remained more or less constant. Expenditures on personal and

TABLE I—PERSONAL INCOME AND PERSONAL EXPENDITURE ON CONSUMED GOODS AND SERVICES ($ MILLION) IN CANADA

	1930	1951	1953
Personal income	4,363	15,693	18,085
Personal expenditures	4,204	13,273	15,115
Itemized personal expenditures (as percentage of total)			
Food	25.40	26.27	24.78
Tobacco and alcohol	6.59	8.71	8.75
Clothing & personal furnishings	13.56	12.86	12.45
Shelter	16.46	11.76	12.86
Household operation	13.10	11.98	12.66
Transportation	8.90	11.74	12.64
Personal & medical care & death expense (1)	6.49	6.13	6.33
Miscellaneous	9.50	10.55	9.53
(1) *Includes Medical & Dental Care*	*2.19*	*1.49*	*1.54*
Hospital Care, Private Nursing, Accident & Sickness Insurance	*1.48*	*2.08*	*2.14*
Other (including drugs and medicines)	*2.83*	*2.55*	*2.66*

medical care and death expenses did not increase relatively. A portion of direct payments to physicians shifted to the insurance field in 1953, but relative total amounts spent on health (and death) did not change in the 23 years under discussion. These data, kindly furnished by Dr. Robert Kohn of the Dominion Bureau of Statistics, support the view that the cost of

[1]Presented at the forty-fifth annual meeting of the Canadian Public Health Association held in Toronto, May 27–29, 1957.

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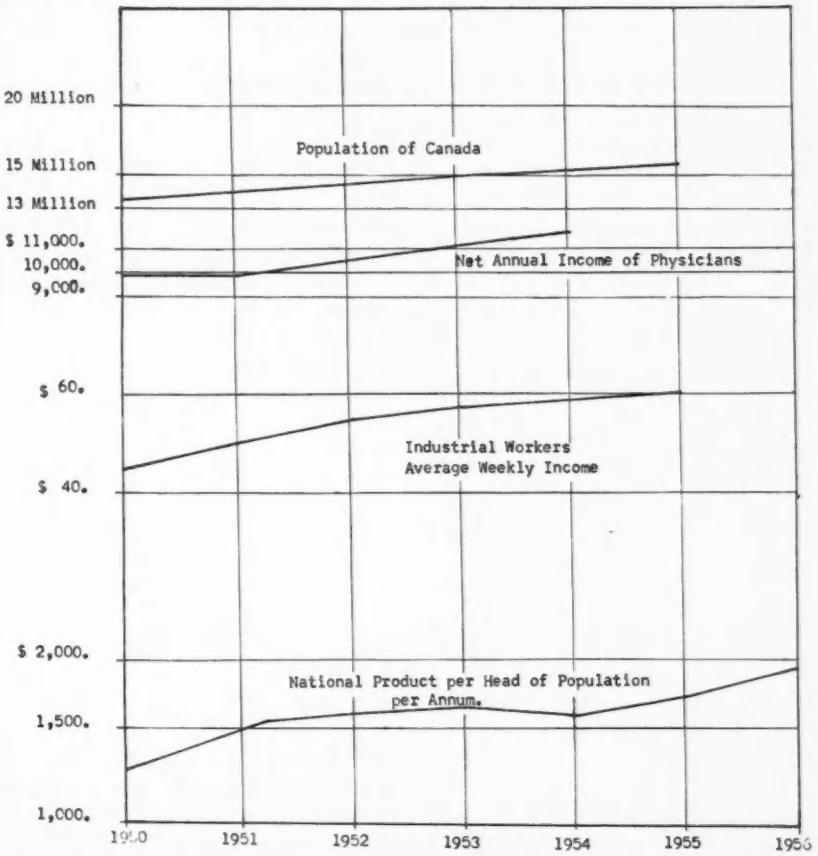
medical care in general and physicians' (and dentists') care in particular, has shown no relative increase since 1930. For instance, between 1946 and 1953 the income of physicians in private practice remained at a constant 1 per cent of the total assessed income of all taxpayers in Canada, i.e., for each $99.00 assessed annual income of all other taxpayers, physicians in private practice, as a group, had an assessed income of $1.00.

Additional information is shown in graph I, relative to incomes. It should



be mentioned that the items in table I, "Personal and Medical Care and Death Expenses," is a wide category, including much more than medical care.

Fortunately, Kohn (2) has recently published a paper in which medical, dental, hospital care, private duty nursing and accident and sickness insurance have been calculated. From this it shows that these items formed 3.7 per cent of personal expenditure in 1930 and 3.6 per cent in 1950. The lowest percentage was 3.1 in 1941, 1942 and 1943 and highest was 3.9 in 1931. This is, therefore, a stable figure. We stress that the costs of medical care, relative to total personal expenditure, have *not* increased in twenty years.

As semilogarithmic paper has been used, the rates of change in the various graphs are comparable. Between 1951 and 1954 physicians' average incomes in Canada increased from $9,881 to $11,891. This rate of increase is somewhat more rapid than either that of the population growth, or the increase of gross national product per head of the population. It has increased at about the same rate as that of the weekly wages of industrial workers, i.e. from $44.84 in 1950 to $60.87 in 1955. For present purposes we may conclude that physicians are relatively as well off as industrial workers and physicians' relative incomes have not fallen. The difference between the two groups was maintained during the period under review.

When hospital costs are discussed, it will be found that such costs have markedly increased during recent years.

Furthermore, whereas *personal* expenditures on medical, dental and hospital care have not increased, there has been greater aid from governmental sources, especially to hospitals. This is a rather complex subject, which cannot be covered in the present paper.

Another approach to analysis of costs in medical care is to compare expenditures in terms of standard units of currency, in which inflationary trends have been removed as far as possible. As an illustration, we may briefly mention the recent work (1) on the British National Health Service. The net per capita costs of the National Health Service in the United Kingdom from 1948–9 to 1953–4 in terms of 1948–9 prices, were estimated to be as follows: 1948–9, £7. 13*s*.; 1949–50, £8. 13*s*.; 1950–51, £8. 19*s*.; 1951–2, £8. 13*s*.; 1952–53, £8. 11*s*.; 1953–54, £8. 15*s*. In these net costs population increases were taken into consideration.

TABLE II—Utilization Rates and Annual Costs per 1,000 Participants, All Plans Offered by Physicians Services Incorporated

Year	Utilization Rates	Costs In Terms Of Cash Paid Out
1949	2,354	$11,760
1950	2,703	12,240
1951	2,948	13,800
1952	2,886	14,640
1953	3,122	15,480
1954	3,525	17,880
1955	3,827	18,360
1956	3,890	19,820

In table II the utilization rates and costs are shown in terms of money paid to physicians, per 1,000 participants per annum, for 1949 through 1956. Utilization rates per 1,000 participants increased over this seven year period, from 2,354 to 3,890 and payments from $11,760 to $19,820.

In table III are shown the average costs per service, between 1949 and 1956.

In 1949–1950 the Modified Ontario Medical Association Schedule for 1948 was used. The Modified 1951 schedule was in use from 1951 to 1955, while in 1956 the Modified 1955 schedule was introduced.

The question might be asked why average costs per service increased

TABLE III—AVERAGE CASH COST PER SERVICE
PHYSICIANS' SERVICES INCORPORATED 1949–1956

Year	Dollars
1949	$4.33
1950	4.17
1951	4.78
1952	4.98
1953	4,96
1954	5.06
1955	4.80
1956	5.13

betwen 1951 and 1954, even if the same schedule was used. This increase is due to the fact that a larger proportion of expensive services, especially in surgery, were being provided in 1954. The decrease in 1955 does not vitiate this statement, as it was mainly due to a change in classification in which low cost laboratory services were counted individually, rather than as a group as was done previously. The following simple example illustrates our point. There were 100 calls in each instance.

	Year A	Cost	Year B	Cost
Office calls at $3.00	70 calls	$210.00	30 calls	$ 90.00
House calls at $5.00	30 calls	150.00	70 calls	350.00
		$360.00		$440.00

Due to different proportions of calls, the average came to $3.60 per service in year A and $4.40 per service in year B. The same scheduled fees were used in both instances.

Increased costs per participant in prepayment plans are therefore due to increased services, increases in schedules and increases in the proportion of expensive services, mainly surgical. The growing use of radiology also increases costs. Costs of various items are shown in table IV in terms of "allowed amounts" i.e. before proration, at present at 90 per cent. In 1956 therapeutic injections were paid at the same rate as office calls, while in 1953 prophylactic immunizations were combined with therapeutic injections. "Immunization and Injection" in 1956 include only prophylactic injections.

As far as services are concerned, there is a constant interaction and reaction between physician and patient. Certain physicians are naturally more solicitous about patients. Others are more nervous and lacking in self-confidence, especially on starting practice, while a third group simply want more money. Patients themselves differ in their needs. Some are likewise nervous and over-protective, while others want to get their "pound of flesh" out of an insurance scheme.

It is unlikely that real medical need has increased in the P.S.I. population since 1947. But the more prosperous and leisured a society becomes, the more it worries about its health. Whether all the additional electrocardiograms, betalipoprotein and electrocortin determinations are going to improve the

real well-being of the population is very much a matter of personal opinion. But if people want these services and if they can pay for them, then they should be provided.

This situation is reasonable, provided insurance plans are voluntary. Otherwise there is the very real danger that the physicians will be exploited, in that excessive demands may be made of them without an increase in their income. This has happened in the United Kingdom and it could certainly happen here. And an enslaved profession will not and can not, do good work.

Control of costs in a prepaid medical-care plan should involve both participant and physician. The participant in a group should have a financial stake in his premium. The employer should not pay the whole subscription for his workers. Furthermore, if there are groups of participants who demand a luxury level of medical service, they should pay a luxury price. Hence the need for experience rating within limits. This means that groups with a high service rate will pay more than those with a low service rate. This method is used in British Columbia. We do not think that experience rating should be by sex, because it is wrong to penalize females who already earn less than males in most industries.

TABLE IV—Physicians' Services Incorporated Cost Report by Type of Service
Medical, Surgical & Obstetrical Plan for Years 1953 & 1956
All Totals Based on Allowed Amounts

	1953				1956			
Type of Service	No. of Services	Allowed Amount	% Cost Distribution	No. of Services per 1,000 Part. Months	No. of Services	Allowed Amount	% Cost Distribution	No. of Services per 1,000 Part. Months
		$				$		
Office calls	519,722	1,412,455	25.4	148.8	1,237,634	3,547,540	27.5	188.2
Home calls	178,081	620,401	11.1	51.0	305,634	1,339,055	10.4	46.5
Night calls	15,400	72,238	1.3	4.4	32,953	184,477	1.4	5.0
Hospital calls	130,580	237,221	4.3	37.4	329,397	612,155	4.7	50.1
Consultations	18,178	184,143	3.3	5.2	48,685	618,561	4.8	7.4
Imm. & inj.	59,789	60,200	1.1	17.1	35,207	67,776	.5	5.3
X-ray, diagnostic	28,339	345,238	6.2	8.1	74,047	819,103	6.3	11.3
X-ray, therapeutic	8,324	36,843	.7	2.4	19,295	89,984	.7	3.0
Refractions	13,602	83,902	1.5	3.9	33,232	208,259	1.6	5.0
Appendectomies	1,734	177,492	3.2	.5	2,897	288,130	2.2	.4
T. & A.'s	5,364	144,551	2.6	1.5	10,932	339,965	2.6	1.7
Minor surgery	27,795	237,710	4.3	8.0	54,152	458,651	3.6	8.2
Cholecystectomies	481	73,124	1.3	.1	770	114,720	.9	.1
Herniotomies	898	100,107	1.8	.3	1,743	196,869	1.5	.3
All other gen. surgery	4,191	458,290	8.2	1.2	9,914	1,015,670	7.9	1.5
Gynaecology	3,786	331,271	6.0	1.1	8,378	640,189	5.0	1.3
Anaesthetics	20,666	285,621	5.1	5.9	47,160	719,487	5.6	7.2
Fractures	3,241	112,516	2.0	.9	7,965	222,777	1.7	1.2
E.K.G.'s	3,540	35,058	.6	1.0	5,276	41,031	.3	.8
B.M.R.'s	980	4,939	.1	.3	1,490	7,421	.1	.2
Miscellaneous	30,035	160,115	2.9	8.6	85,320	440,020	3.4	13.0
Confinements	5,604	331,593	6.0	1.6	13,195	844,526	6.5	2.0
Well baby care	18,936	53,717	1.0	5.4	35,705	105,714	.8	5.4
	1,099,266	5,558,745	100.0%	314.7	2,400,981	12,922,080	100.0%	365.1

Control of Physicians' Services

During the last two years a system has been developed in P.S.I. by which physicians' practices are compared with averages, in regard to costs and in regard to services, for their own county. Each month the I.B.M. machines in P.S.I. print a detailed listing of one-third of all participating physicians in regard to services and payments. Those physicians who are grossly out of line are selected and after due warning they are paid in terms of the average cost per patient per month in their own county. In addition, they are paid full schedule rates for surgery and obstetrics over $50.00 per item. It is felt that this method of control payments is fair and reasonable and that any excesses will be discovered. The averages change every three months, so that assessments and decisions are in terms of a dynamic situation. This method applies particularly to general practice and specialists doing general practice. A small manual on the operation of this system of control payments has been prepared by Physicians' Services Incorporated. (4) These controls are based on new averages calculated every three months for each county or district, separately. A physician's practice is always compared with those of his colleagues, in his own county. Furthermore, divergent practices are selected mechanically. There is no question of discrimination against particular physicians, for reasons other than high average costs and a high rate of service.

The control of surgery rests on the Tissue Committees in hospitals. Such committees should assess the situation in each hospital. This means that hospital statistical departments will have to be greatly improved in many parts of the country.

Another responsibility which rests on the medical profession itself is to see that patients do not go to hospital for frivolous or trivial reasons and that they do not stay there for a day longer than is necessary.

It may be stated with confidence that medically sponsored prepayment plans can do a certain amount to control costs, but that physicians in hospitals must do most of the rest. Furthermore, each individual physician should educate his patients to be reasonable. Public relations experts can never take the place of accurate information to the patient from his own physician. Money will not buy safety or comfort for the medical profession or for anyone else. Only personal effort and application can keep costs within reasonable limits and keep the profession free to practice medicine well.

REFERENCES

1. Abel-Smith, B. and Titmuss, R.M.: The cost of the National Health Service in England and Wales. Cambridge University Press, Cambridge, 1956.
2. Kohn, R.: Canad. J. Pub. Health, 1957, *48*: 85.
3. leRiche, H. and Stiver W.B.: Canad. M.A.J., 1955, *73*: 668.
4. leRiche, H.: A Sample Study on the Participants of a Canadian Pre-payment Medical Care Plan in regard to Costs, Disease, Episodes and Services. Physicians' Services Incorporated, Toronto, 1957.
5. The Record and Control System on Practices of Physicians. Physicians' Services Incorporated, Toronto, 1957.

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Evaluation of Dental Caries Preventive Measures Applicable at the Community Level[1]

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CONTROLLED fluoridation of communal water supplies was introduced in 1944–45 on an experimental basis in Grand Rapids, Michigan; Newburgh, New York; and Brantford, Canada. The 10-year reports summarizing the major findings have been published (1, 2, 3).

In the Brantford study (2), the caries prevalence in the children of that city was compared with that of children in Stratford, a city having a naturally fluoridated water supply (1.2 ppm. of fluoride) and also with that of children in Sarnia, a city having insignificant amounts of fluoride in the water supply. The children born in Brantford since fluoridation began now exhibit the same degree of resistance to dental caries as those of the corresponding age-groups in Stratford. The effects of mechanically adjusting the fluoride concentration in water are identical to those obtained from naturally fluoridated water. The mean DMF (decayed, missing, filled) permanent teeth per child in different age-groups and the percentage of children having caries-free permanent teeth are noted in Table I (a) and (b).

TABLE 1 (A)—PERCENTAGE OF CHILDREN HAVING CARIES-FREE PERMANENT TEETH

Age Group	Year	Sarnia	Brantford	Stratford
6–8	1948	40.96	46.69	78.42
	1955	32.75	66.14	68.21
9–11	1948	6.13	5.71	52.08
	1955	4.19	25.48	32.99
12–14	1948	0.62	1.18	27.22
	1955	1.86	6.69	20.28

TABLE 1 (B)—MEAN DMF (DECAYED, MISSING, FILLED) PERMANENT TEETH PER CHILD

Age Group	Year	Sarnia	Brantford	Stratford
6–8	1948	1.60	1.41	0.41
	1955	1.88	0.69	0.67
9–11	1948	4.21	4.07	1.13
	1955	4.44	2.28	1.89
12–14	1948	7.94	7.68	2.55
	1955	8.42	4.84	3.77

[1]Presented at the Annual Meeting of the Canadian Public Health Association, May 27, 1957, at Toronto, Ontario.

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The reports by Arnold *et al.* (1) and Ast and Schlesinger (3) indicate that the adjustment of the fluoride content of a communal water supply to an optimal level (approximately 1 ppm. fluoride) will produce a marked reduction in the prevalence of dental caries in primary and permanent teeth. No undesirable cosmetic effects from dental fluorosis were observed.

Recent publications in the U.S. Public Health Reports (4) indicate beneficial post-eruptive effects of fluoridated water on caries of older children. In Grand Rapids, Arnold (1) reports that for 16-year-old children the DMF rate decreased 26 per cent between 1944 (the year before fluoridation was started) and 1954.

Hayes *et al.* (5) studied a group of children in Grand Rapids who had ingested fluoridated water since 1945 and a group of children in Muskegon, Michigan (fluoridation started in 1951). All the children studied had two or more first permanent molars in 1944–45, and were continuous residents of their respective cities. The study groups, each composed of 116 children, were matched for caries susceptibility according to the 1944–45 examinations. The mean age of the children from Grand Rapids was 6.52 and those from Muskegon 6.57 years. Between 1944–45 and 1956, the children of Grand Rapids experienced fewer and smaller cavities in proximal surfaces of first permanent molars than did the children of Muskegon. The mean caries score for proximal surfaces of first permanent molars for the two groups of children are summarized in Table II. The findings support the hypothesis that ingestion of

TABLE II—MEAN CARIES-SCORES FOR APPROXIMAL SURFACES BECOMING DECAYED OR FILLED BETWEEN 1944–1945 AND 1956; FIRST PERMANENT MOLARS ERUPTED IN 1944–1945, GRAND RAPIDS AND MUSKEGON

	X-Rays Only			Clinical: Clinical + X-Ray		
	Total Group	Unmatched	Matched Group	Matched	Study	Group
Muskegon	1.99	1.97	1.99	1.22		2.02
Grand Rapids	1.67	1.57	1.73	0.83		1.74
Difference	0.32	0.40	0.26	0.39		0.28
Standard error of difference	..	..	0.12	0.11		0.12

fluoridated water will inhibit caries in teeth that have erupted prior to fluoridation. The finding that fluoride is readily incorporated into enamel post-eruptively supports the above hypothesis (6).

Russell (7) reports that the use of fluoride-bearing water does not adversely affect the prevalence or severity of periodontal disease in children or adults. The study was made on a total of 20,000 persons comprising three groups. One of the comparisons was between 144 adults aged 20–44 in Colorado Springs (2.5 ppm F) and 379 adults of the same age-group in Boulder (fluoride-free). For older adults a comparison was made between residents of Bartlett (8.0 ppm F) and those of Cameron (0.4 ppm F). Comparisons for children were made between residents of Newburgh (1 ppm F) and Kingston (fluoride-free). In addition, 18,000 natives and migrant children in communities using water containing about 1.0 ppm F were compared. In each of the above

studies the fluoride group exhibited the more favourable periodontal condition. Extractions as a result of periodontal disease were somewhat less frequent among adults in the fluoride communities. These findings in respect to periodontal disease support the earlier reports of Zimmerman *et al.* (8) dealing with oral aspects of excessive fluoride in a water supply.

Conclusions of a ten-year medical study (9, 10), including a roentgenological study of a human population, indicate no significant medical differences between the experimental groups in Bartlett who consumed water which contained 8 ppm F (after 1952 reduced to 1.2 ppm F) and the control group in Cameron (0.4 ppm F), except for a higher rate of cardiovascular abnormalities in Cameron and a marked predominance of dental fluorosis in Bartlett. The roentgenological study indicated that "the ingestion of excessive fluoride in water may, on occasion, have a beneficial effect on adult bone, as in counteracting the osteoporotic changes of the aged".

Studies in relation to fluoridation of communal water supplies offer an impressive body of overwhelmingly probable facts—facts which gain in probability with each new experiment. These studies have established fluoridation as safe and effective beyond any reasonable doubt. To what extent have the benefits of fluoridation been made available to the public at the present time?

According to the U.S. Division of Dental Public Health (11), as of May 2, 1956, a net total of 1,293 communities with 26 million people were served by 680 water supply systems to which fluoride had been added. Approximately one out of every four people using central water supplies was drinking water with an adjusted fluoride content. In Canada 928,000 persons are benefiting from communal water fluoridation programs or approximately one out of every nine persons who use central water supplies (12). What about the remainder of the population?

There are on this continent at present a large number of communities with central water supplies whose residents are denied the potential health benefits of fluoridation. A program of public health education designed to inform the public of the medical and dental aspects of fluoridation is essential. Health issues directly affecting the individual have been effective in dredging up fears, from the first days of compulsory vaccination to the present day of controlled water fluoridation. Most of us have witnessed the issue of vaccination, fluoridation and other public health measures in certain quarters "bear fruits of bitterness, dogmatism and misrepresentation of facts". There has often been a "deliberate rejection of reason by the antifluoridation forces". Information, in the form of facts, not propaganda, is the best weapon against such fears.

There is also a need to extend benefits of fluoridation to population centers not served by central water supplies. Two of the most promising means of accomplishing this appear to be (a) fluoride solutions applied topically to teeth, (b) fluoride compounds in dentifrices.

Dentifrices containing sodium fluoride

The introduction of sodium fluoride into conventional dentifrices or prophylactic pumice-hydrogen peroxide mixture has not proved successful in reducing dental caries (13, 14, 15, 16, 17, 18).

The more recent dentifrice formulations are reported to contain as much as 0.1 per cent of soluble ionic fluoride (19). A dentifrice must be evaluated clinically with respect to effectiveness and safety before it may be considered therapeutic. Studies are in progress but no results of the clinical testing of the recent formulas of dentifrices containing sodium fluoride have been published.

Dentifrices containing stannous fluoride

Reports dealing with cariostatic effects of dentifrices containing stannous fluoride with a fluoride compatible polishing agent in the form of heat treated calcium orthophosphate are interesting. Statistically significant reductions in DMFS (decayed, missing, filled surfaces) and DMFT (decayed, missing, filled teeth) were observed in grade school children (20, 21, 22) and in a freshman class (23) following the use of a dentifrice containing stannous fluoride (1,000 ppm F) for one year, as compared to a control. The use of the dentifrice was not supervised. A comparison between the anticariogenic effects of dentifrices containing stannous fluoride and sodium fluoride were made in a study by Muhler *et al.* (16). After twelve months of unsupervised use of the dentifrice a 36 per cent caries reduction in DMFS was observed in the stannous fluoride group as compared to a 9.9 per cent reduction in the sodium fluoride group. Of interest is the much greater reduction of proximal (83.7 per cent) than occlusal (29.8 per cent) lesions after one year's use of the stannous fluoride dentifrice. Table III summarizes the studies dealing with the effect of dentifrices containing stannous fluoride on dental caries.

TABLE III—EFFECT OF DENTIFRICES CONTAINING SnF_2*(1000 PPM) ON DENTAL CARIES

Study	Patients		Duration	Caries Reduction (in %)		
	Number	Age (average)		DMFS	Prox.	Occ.
Muhler *et al.* (20)	514	10½ yrs.	6 mos.	72.0	Complete	26.0
Muhler *et al.* (21)	Cont. 209 Expt. 214	10 yrs.	1 yr.	49.3	83.7	29.8
Jordan (22)	Cont. 257 Expt. 248	9½ yrs.	Interim Report		No figures released	
Muhler *et al.* (23)	Cont. 157 Expt. 165	21½ yrs.	1 yr.	41.6	45.7	37.9
	COMPARISON BETWEEN SnF_2 AND NaF** DENTIFRICES					
Muhler *et al.* (25)	Cont. 225	10 yrs.	1 yr.			
	SnF_2 Expt. 219			36.0		
	NaF Expt. 212			9.9		

* Stannous Fluoride.
** Sodium Fluoride.

Topical application of sodium fluoride

The literature contains a large number of reports relating to different procedures of using topical fluoride applications for the prevention of dental caries. Most of the treatment methods have produced definite reduction in the incidence of dental decay. It is beyond the scope of this report to review all these studies. Reference will be made only to a limited number of recent publications. The most recent and detailed surveys are those of Syrrist (24), Bergman (25), Bibby and Brudevold (26) and Sundervoll-Hagland (27).

In the study by Syrrist a group of 78 children in which one upper quadrant of permanent teeth had been treated seven times during a two-year period

with a 2 per cent sodium fluoride solution were re-examined five years after discontinuation of the treatment. At the last examination in 1954, the average age of the patients was 19.3 years.

Analysis of the data shows that:

1. After the two-year treatment period, the treated quadrants showed a 51 per cent reduction in new carious surfaces compared with the untreated quadrants.

2. In the five-year period following the completion of the treatment, the incidence of new cavities was 9 per cent less in the treated than in the untreated quadrants.

3. As time after cessation of treatment increased, there was a decrease in the percentage difference of new caries between control and treated quadrants. At the end of the seven-year study period the difference was 15 per cent.

5. The total number of saved DF surfaces in this group of 78 children in which one quadrant was treated was 62, the mean saving per child being 0.8 DF surfaces.

6. The caries reduction demonstrated in this study may be interpreted as a postponement of the onset of caries in the treated teeth by approximately one year.

Ten studies dealing with the effects of topical fluoride on the deciduous teeth were analyzed by Martin (28), and a positive caries inhibition was obtained in all studies.

In the studies on adults, two studies (29, 30) have indicated that a reduction in dental caries may be expected from the topical use of sodium fluoride solutions. A single application of an acidulated solution was ineffective (31).

Effect of topical applications of stannous fluoride and related compounds on dental caries

Table IV summarizes the major published work in connection with the use of

TABLE IV—Effect of Topically Applied Stannous Fluoride and Related Compounds on Dental Caries

Study	Preparation	Patients		Duration	Caries reduction (in %)	
		Number	Age (yrs.)		DMFS*	DMFT**
Howell (33)	2% SnF_2	Cont. 139 B 194 C 195	Grade 2 Junior High	2 yrs.	 B–58.8 C–65.5	 83.1 60.9
Slack (34)	2% SnF_2	328	Children	1 yr.	36.36	
McLaren *et al.* (35)	2% SnF_2	600	6–11 yrs.	2 yrs.	18.87	
Gish *et al.* (36)	4% $KSnF_3$	Cont. 411 Expt. 390	6–15 yrs.	1 yr.	39.2	53.7
	Comparison Between SnF_2 or SnClF and NaF					
McDonald *et al.* (38)	4% SnF_2 2% NaF Control	Gp. 1–86 Gp. 2–76 Gp. 3–65	3–12 yrs.	1 yr.	37.0 12.0	57.0 21.0
Howell *et al.* (39)	4% SnClF 1% NaF	397 394	6–15 yrs.	1 yr.	83.5 "Superiority"	86.9%
Gish *et al.* (37)	2% NaF 8% SnF_2	Cont. 275 Expt. 275	7–8 yrs.	8 mos.	26.0 "Superiority"	21.0%

* DMFS—Decayed, Missing, Filled Surfaces.
**DMFT—Decayed, Missing, Filled Teeth.

stannous fluoride compounds for the prevention of dental caries. The studies summarized indicate a significant reduction in dental caries following the use of 2 per cent stannous fluoride solutions according to the procedure of Knutson (29). The caries reduction in per cent (DMFS index) range from 59 to 18.87 per cent (32, 33, 34, 35).

Studies relating to a comparison between stannous fluoride and sodium fluoride indicate that the use of stannous fluoride or stannous chlorofluoride compounds results in a significantly greater reduction in dental caries as compared to sodium fluoride.

Gish (36) compared the use of sodium fluoride (Knutson method) against one application of 8 per cent stannous fluoride. After seven months the stannous fluoride was significantly more effective than the four applications of sodium fluoride in reduction of caries. Other reported studies (37, 38) support these findings.

The results of the studies dealing with the use of stannous fluoride are interesting. The longest study thus far reported is two years. Additional studies, many now in progress, will add to our knowledge of this compound and its effect on dental caries.

Summary

1. The ten-year reports of controlled fluoridation of communal water supplies in Grand Rapids, Brantford, and Newburgh indicate a marked reduction in the prevalence of dental caries in primary and permanent teeth of residents ingesting fluoridated water since birth.

2. Beneficial posteruptive effects of fluoridated water were noted on permanent teeth.

3. The ten-year medical studies indicate no significant medical difference between the group that consumed water which contained 8 ppm. of fluoride compared to a group drinking water containing insignificant amounts of fluoride.

4. In Canada, approximately one million persons are benefiting from communal water fluoridation programs.

5. The clinical evidence that fluorides in a dentifrice significantly reduce dental caries is inconclusive.

6. Topical application of sodium and stannous fluoride to teeth significantly reduces dental caries in children. The more recent studies with stannous fluoride suggest this compound may be particularly promising in this regard.

REFERENCES

1. Arnold, F. A., Jr., *et al.*: U.S. Pub. Health Rep., 1956, *71*: 652.
2. Brown, H. K., *et al.*: Canad. J. Pub. Health, 1956, *47*: 149.
3. Ast, D. B., and Schlesinger, E. R.: Am. J. Pub. Health, 1956, *46*: 265.
4. U.S. Pub. Health Rep. 1957, 72: 242.
5. Hayes, R. L., *et al.*: Am. J. Pub. Health, 1957, *47*: 192.
6. Brudevold, F., *et al.*: J. Dent. Res., 1956, *35*: 420.
7. Russell, A. L.: U.S. Pub. Health Rep., 1957, 72: 243.
8. Zimmerman, E. R., *et al.*: J. Am. Dent. Ass., 1955, *50*: 272.
9. Leone, N. C., *et al.*: Fluoridation as a Public Health Measure. Am. Ass. for the Adv. of Sc., 1954.
10. Leone, N. C., *et al.*: Am. J. Roentg., 1955, *74*: 874.

11. U.S. Division of Dental Public Health, May 2, 1956.
12. Governors' Letter, C.D.A., 1957, *5*: 5.
13. Bibby, B. G., *et al.*: J. Dent. Res., 1946, *25*: 207.
14. Bibby, B. G.: J. Dent. Res., 1948, *27*: 367
15. Bibby, B. G., and Wellock, W. D.: Unpublished Report, 1948.
16. Muhler, J. C., *et al.*: J. Am. Dent. Ass., 1955, *51*: 556.
17. Winkler, K. C., *et al.*: Brit. D. J., 1953, *XCV(6)*: 119.
18. Muhler, J. C., *et al.*: J. Am. Dent Ass., 1953, *46*: 290.
19. Russell, K. L.: Personal Communication, 1957.
20. Muhler, J. C., *et al.*: J. Dent. Res., 1954, *33*: 606.
21. Muhler, J. C., *et al.*: J. Am. Dent. Ass., 1955, *50*: 163.
22. Jordan, N. A.: North West Dent., 1956, *35*: 272.
23. Muhler, J. C., *et al.*: J. Dent. Res., 1956, *35*: 49.
24. Syrrist, A.: Odont. Rev., 1956 *7(3)*: 386.
25. Bergman, G.: Acta Odont. Scand. 11: Supplement 12, 1953.
26. Bibby, B. G., and Brudevold, F.: Am. Assoc. for the Adv. of Sc., 1954.
27. Sundervoll-Hagland, I.: Odont. Scandinavica, 1955, *13*: 5.
28. Martin, N. D.: Aust. Dent. J., 1956, *1*: 141.
29. Knutson, J. W.: J. Am. Dent. Ass., 1948, *36*: 37.
30. Rickles, N. H., and Becks, H.: J. Dent. Res., 1951, *30*: 757.
31. Arnold, F. A., *et al.*: J. Dent. Res., 1944, *23*: 155.
32. Howell, C. L., *et al.*: J. Am. Dent. Ass., 1955, *50*: 14.
33. Slack, G. L.: J. Dent Res., 1955, *34*: 785.
34. McLaren, H. R., and Brown, H. K.: Canad. J. Pub. Health, 1955, *46*: 387.
35. Gish, C. W., *et al.*: Proc. I.A.D.R., 1957, p. 28.
36. Gish, C. W, *et al*: Proc. I.A.D.R., 1956, p. 59.
37. McDonald, R. E., and Muhler, J. C.: Proc. I.A.D.R., 1957, p. 28.
38. Howell, C. L., and Muhler, J. C.: Science, 1954, *120*: 316.

Accident Prevention—Our Business[1]

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PROTECTING the health of the public, prolonging life, and encouraging a "state of complete physical, mental and social well-being", is a big order. But, that is our business. As in every business, regular inventory taking is often necessary, in this case an inventory of areas of operation and their specific problems. How else can we adapt our patterns to meet the changing trends in public health and to meet the new problems which have, to some degree, replaced the old? Accident prevention is one of these new problem areas. As we begin to blueprint this area of "our business" and examine the various areas of responsibility to which each of us contribute, I am reminded of an old story called "A point of view".

Three mice lived in a very old barn, scurrying to and fro and eating the scattered grains of wheat. Whenever they were not too busy hunting food, they would discuss the ways of the world and the things they saw on their explorations. One day lively and loud music was heard in the distance, and the mice came scampering home. They had been told that a parade headed by elephants was approaching and each wished to find a vantage spot for never before had they seen an elephant. One ran high into the loft and looked down through a crack in the outside boards, and all he could see was the huge back and tail of the elephant. Another placed himself on the left side of the large door where he could hide in the straw yet look up and see very clearly, but he saw only the large feet and leg of the elephant. The third sat on a large beam and from a knothole he could look straight at the parading elephants, but all he could see was the big flapping ear and the long, swinging trunk. After the parade the excited mice began to clamour all at once about what they had seen and a violent argument developed—as you can well imagine. Each had seen something entirely different; yet, if all the views were put together, the whole elephant would appear.

Each of us looks at the business of accident prevention from his own "knothole", from his own concepts, training, and experience. From these vantage points segments of the whole are seen and understood. But it is only when all of us pool our beliefs, training, and concepts that a complete blueprint for accident prevention can develop.

Often, when we are faced with making necessary changes or adaptations in our old patterns to make way for "newer trends" we feel threatened. Everyone resists change to some extent, most of us feel more secure in the old and familiar, but we are in a changing and, I hope, progressing business. This progress is revealed by the fact that accidents are now a recognized

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public health problem. Accidents are certainly not new, even the caveman must have tripped over bones in the dark halls of his cave. As other health problems have decreased, the problems of accidental deaths and injuries and degenerative diseases have increased. So public health assumes its responsibility and accident prevention becomes our business. We approach this problem in the same way that we have approached other problems in the past and we ask the questions, "What do we wish to accomplish in our accident prevention programs?" "What methods are being used in accident prevention education?" "What can my profession contribute?"

Included in what we wish to accomplish by our educational efforts are: (1) development of an awareness of accidental hazards—both the environmental and the physical, as well as the emotional tensions which can increase our accident susceptibility; (2) instruction in ways of eliminating certain hazards and minimizing others; (3) action on the part of the individual to eliminate hazards and to develop a "safety consciousness". These three points are the basic principles of education—stimulation, instruction, and motivation. One factor which is often overlooked is the need to begin these accomplishments within the health department—from the administrator to the custodian. This inservice training applies not only to the provincial and regional departments, but also to local units.

When accident prevention programs are to be launched, it is the administrator who usually makes the decisions and sets the stage. All department heads and staff play an important role in determining the need for such programs and in the subsequent development of the most effective program possible; but, to a large degree, it is the administrator who determines the the importance of accident prevention and the amount of time staff can devote to these activities.

Priority in public health programs is most often determined by the magnitude of the problem and by the availibility of personnel within the various disciplines to assist with the program. Money, of course, is always a problem, but few proposed programs which are based on a defined need and on sincere interest of staff have fallen by the wayside only for lack of money.

From the administrator's point of view, a definition of the problem and of the relationship of accident prevention to the whole public health program of his area is very important. Also important to him is the attitude of his staff toward the program as well as their interest in it. How else can he sell "this business" to those above him?

In Saskatchewan you are doing an excellent job of fact-finding. The detailed review of Saskatchewan death certificates for the past five years indicates the areas of serious accidents and the age group in which these fatal injuries occur. These statistical data also indicate the need for emphasis on home and farm safety. These safety fields have long been overlooked while our undivided attention has been concerned with the industrial and traffic fields. In 1952 (from your death certificates) home and farm fatalities accounted for 55% of all fatal accidents; motor vehicle 28%. There has been a reduction of 18% in home fatalities since 1952, and a 3% increase in motor

vehicle deaths. In 1956, however, home and farm deaths still comprised 41% of all fatal accidents, and motor vehicle deaths 31%.

No true educational program can be based on fatalities alone. If it were, most of our energies would be spent among the older age-group and specifically on the causes of falls. This area is important, and certainly, research and epidemiological studies need to be conducted in this well-defined area. But in surveying "this business" we are in, we need to review as many factors as possible to discover *what* home and farm accidents are occurring and *why*. You are collecting these data not only on fatalities, but also on accident cases requiring hospital services. A study of these data provides interesting information. From 1952 to 1956 the increase in accident cases hospitalized was 638, but the total number of days increased by 11,584 days—almost 32 years—and the cost of hospitalization for accident cases increased $551,037. I would not attempt to explain the various factors involved, but use these data only to illustrate that accidents are costly. It would be interesting to study these hospitalized cases to determine the injuries requiring longest stay in the hospital. Probably the burns and scalds would prove most costly. These injuries usually occur at home or on the farm. In localities where surveys of non-fatal home accidents have been made, the 1 to 14 age-group has accounted for at least 50 per cent of all non-fatal home injuries, and the old age-group a small percentage.

If we are to base our educational program on the facts, we immediately see that we must reach every group—the young and the old—in the community. To accomplish this task, we need to work very closely with all existing agencies that are in touch with these groups. We need a health department team approach because in accident prevention every skill in public health can and should be utilized. And equally important, from the educator's point of view, we need to use the best educational methods, based on sound educational philosophy. We often violate educational principles. We offer prizes when the school administration frowns on "rewards". We speak of "meeting the deep-seated needs which may cause accident susceptibility", and at the same time, "tack up posters" in an effort to change behavior. We talk of "safety as a way of life" and then try to produce change as if trying to introduce a new tooth-paste.

One of the basic concepts in safety education is our belief that safety is an essential part of what we do and how we do it, not a separate item or an afterthought. If we consider safety in this light, it becomes a part of every public health teaching experience. It is neither a new program nor one to be added to an already crowded schedule. For "teaching safety" is no different from teaching nutrition, child care, or sanitation. In fact, accident prevention is included in the basic instruction. Preparing or storing food, bathing the baby, or disposing of refuse—all require certain safety procedures.

We do need to plan our educational program and to use statistical data in defining areas for educational emphasis, as well as in preparing the content of instruction. For example, records of accidental poisoning in children place the problem in the 1 to 4 age-group, with the highest incidence around 2 years. Easy availability of the poison is an important factor. (Incidentally, the

medicine cabinet is not where youngsters find the poisonous agent in a large majority of cases.) Another factor is that children of this age put everything into their mouths. The poisoning agents may differ according to geographic location. From these observations, it is evident that health department activities which reach mothers of young children should include instruction relating to this problem. What to tell the mother, the advice to give, is obtained through a study of existing records and through information obtained during many home visits. Child health conferences, where we are concerned with the physical and mental development of the child, provide an excellent opportunity to discuss accident prevention as it relates to normal growth and development. Sanitary inspectors can include improper storage of poisons among other environmental hazards of the home and can be on the lookout for such hazards during any inspection of the premises. This vigilance is especially important in agricultural areas and around farm homes where sprays, etc. must be kept.

Pre-natal classes offer an excellent opportunity to develop an awareness of child safety and safe habits. The mother-to-be is naturally interested in knowing about the growth and development of the infant she is carrying and how to take the best possible care of herself and her baby. From the sanitary inspector's point of view there may be environmental hazards which need correcting especially at this time, a hand-rail for the cellar stairs is necessary at all times but particularly now.

We need to review our activities, our programs, our "receivers of services" and pin-point our educational programs to specific needs. Sanitary inspectors who are familiar with environmental hazards (faulty heaters, improper heater connections, electrical hazards, unsafe stairways, etc.) can teach other staff members and community groups to recognize many of these hazards, and can help to establish preventive measures. Public health nurses, who are familiar with the growth and development of children and who can recognize physical and mental disabilities in older people, can advise necessary precautionary measures. Statisticians can interpret mortality and morbidity records and assist in analyzing problem areas. Physicians can include "fact-finding" in their patient records and offer accident prevention education as part of their other preventive measures—and so we could go on—for it takes all of us to reach the population of those under 1 year of age to those of 65 years and over.

In the 1956 report of the Saskatchewan fatal accidents, drownings ranked third with 41 lives lost and 20 of these occurred in the 1 to 14 age-group. In the 1956 report of fatal farm accidents, drownings ranked second in the cause of death. Of the total 15 drownings, 11 were children 1 to 14 years of age who drowned in dugouts, sloughs, water troughs, and while playing on thin ice. This is an old problem and one not confined to Canada. California, Utah, and other areas, especially those using canals and irrigation ditches, are faced with developing a realistic approach to this problem. If we consider accident prevention our business, how do we attack this problem? From each point of view how do we see this "elephant"? In the services given through each division, how can this problem be met—in sanitation services, nursing services or school health services? What can other groups contribute in an effort to

solve this problem? These are the questions we face and the questions we need to answer, not just in "lip service" but in co-operative planning based on knowledge of the problem. After the planning we need to answer with well defined programs based on sound educational principles. We also know that our answers must be realistic, and if we offer preventive measures that these measures can be accomplished.

If we look at accident prevention from any "knothole" we will see that the heart of the program is education. Of course, education is of little value unless we apply what we learn to our everyday experiences. We know that changing old habits is a hard task. And if we are to succeed in "our business" we must get people to discard unsafe habits. Knowing the safe method is no good unless we apply it.

How do we progress from this awareness to motivation for action? I do not know. We do know that action follows conviction. We need to convince people through the constant and repeated effort of all community agencies working together and through an amalgamation of all points of view until the whole program of accident prevention develops and becomes a part of this business of prolonging life. You, in Saskatchewan, are doing this. When I see the reduction in home accident deaths since the beginning of your program, I truly feel as if I should humbly bow my head, that today I should have been the audience, and you the speaker, since action is always more eloquent than words.

FLUORIDATION IN THE UNITED STATES

A Public Health Service report on the status of fluoridation in the United States as of September 1, 1957 showed that 1,532 communities, served by 798 water supply systems, are receiving fluoridated water. The population served is 32,319,603.

With fluoridation of the Minneapolis public water supply, begun on August 6, about one-third of Minnesota's population is reported to have this protection. More than a million persons live in the 41 communities of the state that have fluoridation programs.

Some Problems in Industrial Morbidity Statistics[1]

R. B. SUTHERLAND,[2] M.D., D.P.H.

IT is not many years since physicians in industry were concerned primarily with those conditions of work which produced direct and demonstrably harmful effects upon health; or to put it more simply, those conditions causing or contributing to, accidental injuries and the so-called "occupational diseases". During the last war and the years following, an increasing number of psychologists, sociologists and industrial physicians have realized that industry has a responsibility, not only to maintain production, but to provide a working environment which, in addition to being healthy, also affords employees an opportunity to develop happier and more satisfying lives. This concept, that employees are entitled to a chance to achieve job satisfaction, and to grow, is probably not yet accepted among employers (or labour) as widely as it should be but its widespread realization must come sooner or later in our society.

What has this concept of the role of industry in the community to do with morbidity statistics? Aside from industry's direct interest in maintaining production, and the consequent desirability of keeping workers on the job, the interest of the industrial physician is two-fold. Firstly, he wants assurance that his employees are healthy, using the word "health" to mean "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" as defined by the World Health Organization. Secondly, if any employee groups are less healthy than they should be, he wants to know the factors responsible so that they may be corrected, if possible. The use of the word "health", as defined, emphasizes the expansion of interest in the over-all welfare of employees which has developed among industrial physicians in the past decade or two.

Our first problem then becomes one of "How can the industrial physician measure health?" Health cannot be measured directly by methods presently available. Indirect measures, involving efficiency and the absence of health, have been used since the first world war. These have included measurements of hourly or weekly production, labour turnover, absenteeism and morbidity, and the study of the physical and psychological factors in the environment which affect these indices. It would appear that an index of positive health, if one were available, might constitute another useful kind of measurement to supplement the indices obtained by indirect methods. At the present time,

[1]Presented at the forty-fifth annual meeting, Canadian Public Health Association, Toronto, May 27–29, 1957.

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morbidity indices still provide our best general estimate of the health of the working population. In addition. they have the inherent quality of focusing attention on that segment of the working population which is not healthy—the group, in fact, which requires attention. The use of morbidity indices thereby affords guidance in the planning and administration of industrial health services, and in the consideration of methods for the prevention and control of sickness and accident. Other indications of the usefulness of morbidity statistics have been given in a recent paper by Sellers and Sutherland (1).

The preparation of indices implies the making of comparisons. This presents the second major problem, that of deciding what comparisons should be made. In reality, this problem is a whole assemblage of smaller problems, none of which are new to public health statisticians. In respect to morbidity indices, decisions must be made in each of the following areas:

- The population to be studied. The influence of age and sex composition of the population on the incidence and duration of morbidity are well known. Further subdivision of population data depends on the use to be made of the statistics.
- Definition of morbid condition—decisions will be needed as to whether, for example, leave for normal pregnancy is to be counted.
- The kinds of morbidity to be studied—i.e. disabling morbidity versus non-disabling (the latter included in the record of visits to the plant health centre)
- The period of study.
- Age groups.
- Occupation and department groups.
- Diagnosis groups.
- The morbidity indices or rates to be used.

With regard to disabling morbidity, further decisions will be required on:

- The counting of beginning absences versus terminated absences.
- The use of calendar versus working days.
- Duration groups.
- Repeat absence groups.

The most urgent need, relating to the whole field of comparisons which might be made, is the uniform adoption of acceptable decisions in each of the above areas. There are pros and cons to be weighed in each area, and universal acceptance may not be possible in all. In some areas, the final decision will have to be arbitrary.

It might be indicated here, however, that since publication of the "International Statistical Classification of Diseases, Injuries and Causes of Death" in 1948, considerable progress has already been made in attempts to ensure that the data gathered and the indices prepared will have some uniform basis. The work of the Divisions of Industrial Hygiene and Medical Statistics, of the Ontario Department of Health, has done much to stimulate such uniformity both in Ontario and to a lesser extent in the United States. In Ontario, some 50 companies have been influenced to a considerable degree in this respect. Last year, the Committee on Medical Care for Industrial Workers, of the American Medical Association undertook the preparation of a guide for measuring morbidity absence in industry, with the purpose of

establishing a uniform basis for the measurement of morbidity causing loss of time from work. In Great Britain, other workers have arrived at bases for comparison essentially similar to those used here (2, 3, 4). At the present time, there is fairly general agreement on:

- Use of the calendar year.
- The age groups used.
- Counting of calendar days rather than working days.
- The duration groups used—at least the subdividion of absences into those of under 4 days' duration and those of 4 days' duration or longer.
- The groupings used for repeat absences.
- The morbidity indices used. There is quite general acceptance of three basic rates as a minimum
  - (a) number of absences per 100 employees per year—frequency or inception rate
  - (b) number of days lost per person per year—disability rate
  - (c) number of days lost per absence—severity rate.

  In addition, other rates have been defined and used for special purposes.

Uniformity is still needed, particularly in regard to the groupings to be used for occupations and for diagnoses, and in regard to the counting of beginning absences versus terminated absences.

Occupation groups

The selection of the occupation groups to be used will be largely determined by the numbers of employees in each occupation, and the availability of population data by occupation. It is probable that the measurement of morbidity by occupation will nearly always be the subject of individual enquiries directed to a specific purpose. From field experience, it would appear that the most generally available information in this area will be based on broad department groupings, which subdivide the plant population into 4 to 6 groups characterized by the essential similarity of the work done by employees constituting a group. There does not appear, therefore, to be much hope for the production of morbidity data by specific occupation other than on an individual plant basis.

Diagnostic groups

The problem of diagnostic groupings on the other hand is one in which there is considerable hope for eventual uniformity. The International Statistical Classification provided a foundation which was basically acceptable to the majority of workers concerned with the classifying of morbid conditions, and many of the reports of industrial morbidity experience now present the causes of morbidity under groupings based essentially on the chapter headings of the I.S.C. Manual (2, 3). The importance of being able to present industrial morbidity data in diagnosis groups which are comparable to those used for morbidity data collected in other fields is obvious. For inter-company comparisons, a coarser diagnostic grouping of the 6 or 7 main causes of morbidity would appear most useful, and agreement on these condensed diagnosis groups is also desirable, though probably not really essential.

In its application to industry, however, the Manual has diverged from common usage. The main divergence relates to the occupational poisonings,

effects of weather, temperature, etc, which for decades have been regarded by industrial physicians as "occupational diseases". These conditions, whether occupational in origin or otherwise, are shown in the Manual in the Injury Section along with accidental injuries. As a result, occupational illness, in the Manual, is confined to such conditions as certain infectious diseases and neoplasms, welder's conjunctivitis, the pneumoconioses, abdominal hernia, the dermatoses, and herniation of the nucleus pulposus, a rather heterogeneous group, to say the least. Information in regard to occupational poisonings, etc. is thus lost, unless the detail is retained through presentation of the data in a rather lengthy list of diagnoses. Even when this is done, there is still a need from the industrial point of view for terms which may be used to denote specifically accidental injuries on the one hand, and those conditions which for years have been recognized as "occupational diseases". What the final solution to this problem will be I cannot say. Our own approach has been to restrict the words "sickness" and "accident" by definition* so that we may subdivide morbidity into two sections conforming to industrial usage. These terms can then be qualified by consideration of the occupational or non-occupational origin of the morbid condition, wth the end result that a four-way classification of causes of morbidity into occupational or non-occupational sickness or accident is achieved. The arrangement still permits tabulations to be made alternatively under the disease and injury divisions of the Manual.

One further need in the area of diagnosis groupings should be stressed. The Manual contains several short lists which are really condensations of the International List for special purposes. A similar list would be most useful in industry, and particularly in simplifying the coding of diagnoses. Such a list has been prepared by the Ontario Department of Health (5) and has been found practical in use.

Beginning versus terminated absences

The counting of absences which begin in a calendar year, and the days lost by those absences within the year, results in accurate frequency rates, but the disability and severity rates are usually under-estimated because of the loss, in absences unterminated by December 31, of days of disability occurring in the following year. Frequency and disability rates based on beginning absences, however, are directly related to the plant population in which the absences occur.

The counting of terminated absences results in frequency rates which do not bear a true relation to population figures, and do not accurately reflect the incidence of morbidity in any calendar year, although the severity rate, being the number of days lost per absence, is accurate. The case for counting terminated absences seems to be based on a wish to know the actual days lost by individual cases for the payment of sickness benefit claims, and perhaps a desire to determine an accurate severity rate.

**Sickness*—Those causes of morbidity constituting the first sixteen sections of the International Classification, plus non-accidental injuries, i.e. effects of poisons, weather, exposure and related conditions (code numbers 001–795 plus N960–989).

Accident—Those causes of morbidity constituting section 17 of the International Classification with the exception of effects of poisons, weather, exposure and related conditions (N800–959 plus N990–999).

The systems of absence recording developed by the Ontario Department of Health are based upon beginning absences. and an attempt is made to minimize losses resulting from unterminated cases. Our system requires the routine counting of absences which begin in a calendar year, and the calendar days lost by those absences up to March 31 of the following year. This always gives an accurate frequency or inception rate, and in almost all instances, accurate disability and severity rates as well. In medium-size and small plants there is seldom any carry-over of days lost past March 31. It is true that occasionally some days may be lost by absences which continue beyond the 3 months' holdover. If an accurate count of the days lost by all absences beginning in a calendar year is specifically required, arrangements may be made for those days lost after March 31 of the following year to be separately recorded and subsequently added to the days accumulated up to March 31. For the purpose of routine reporting, however, a uniform arbitrary cut-off date not only speeds the completion of annual reports, but only infrequently introduces any error in the disability and severity rates. Furthermore, a case might be made for deliberately not counting such losses when they occur, since the inclusion of all the days lost by a case of tuberculosis or mental disease requiring hospitalization would result in unfairly distorted disability and severity rates for the company for that year. We deem it preferable to adopt some arbitrary rule to eliminate such weighting; in this way company rates more truly reflect the effect of ordinary illness, and so permit a more realistic annual comparison between companies. In our opinion, such rates provide less biased indices of the general health of the plant population.

Interpretation of indices

Before leaving the broad field of comparisons which might be made, it should be emphasized that the use of the word "morbidity" in connection with rates or indices needs some qualification. As mentioned by Raffle (2), industrial morbidity rates reflect "not only illnesses, but also the reactions of people to their working environment, to the morale of the group in which they work, and to their social adjustment inside and outside the factory". Among the many factors affecting morbidity rates are "the nature of the work, the degree of physical fitness required in order to undertake it, the environmental working conditions, the quality of supervision . . . the provision of sick pay, and all the effects upon the individual of his social life outside the factory". To these should be added factors of psychological significance, such as loyalty to the firm and to fellow-employees, recognition of the individual's importance in terms of ability and skill and assurance of fair consideration, to mention a few.

It is generally accepted that the influence of such non-morbidity factors will be most apparent in absences of short duration, for the most part those of less than 4 days' duration, and that absences of longer duration will more truly reflect the effect of real disease and injury conditions. When the purpose is to show the relative importance of various causes of morbidity, it would appear desirable therefore, to prepare morbidity indices in relation to the incidence of, and days lost from, absences of 4 days' duration or more. In such studies, certification of the diagnosis by the attending physician should

be required. This should not be taken to imply that frequency, disability and severity rates based on uncertified absences of 1 day's duration or more are of little value. Insofar as such rates reflect the reactions of people to their working environment, to the morale of the group and to their social adjustment, they are real indices, of value for comparison purposes, and probably give a better estimate of the health of the employee population (using health as defined) than do morbidity indices based on the incidence of real organic disease and injury.

Recording systems

The chief problems encountered in the collection and recording of industrial morbidity experience are those resulting from:

Insufficient support on the part of management. Without definite directives regarding the reporting of all morbidity absences to the plant health center, and providing for the periodic completion of the population data needed for the compilation of rates, any recording system will eventually break down.

Undue complexity of the recording system. In practice, it has been found that, above all else, the recording system must be kept as simple, and the instructions as clear, as it is possible to make them. The more extensive the subdivision of information required, the more the industrial physician will have to take a direct part in the functioning of the system.

Conclusion

In attempting to indicate the problems associated with the collection, compilation and use of morbidity statistics in industry, it is to be hoped that we have not given the impression that the obstacles to be faced are insurmountable. Much has been accomplished in the past decade to increase the value of industrial morbidity statistics. Further increase in their value will depend on the degree of uniformity achieved in the adoption of suitable definitions—definitions of the purpose of such morbidity studies, the terminology and classification used, the bases of measurement and the indices to be computed. Interest in the subject of industrial morbidity statistics at the present time is such as to justify hope of further progress within the next few years.

REFERENCES

1. Sellers, A. H., and Sutherland, R. B.: Canad. M.A.J., 1956, *74*: 705.
2. Raffle, P. A. B.: Brit. J. Indust. Med., 1957, *14*: 73.
3. Roberts, C. G.: Trans. Assoc. Ind. Med. Off., 1951, *1*: 65.
4. Great Britain, Registrar General's Advisory Committee on Medical Nomenclature and Statistics: Measurement of morbidity (Studies on medical and population subjects, No. 8), H.M. Stationery Office, London, 1954.
5. Sellers, A. H., Marr, W. B., Sutherland, R. B., and Bishop, W. H. H.: Canad. J. Pub. Health, 1955, *46*: 164.

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NOW IS THE TIME

DURING the past three years, Canada and the United States have had a lower incidence of poliomyelitis. Last year in Canada there were 368 paralytic cases and 34 deaths and to date this year, figures are 99 paralytic cases and 7 deaths. The five-year average is 857 paralytic cases. Similarly, in the United States (1957) there have been 4,130 cases reported in contrast with the five-year average of 22,168 cases.

In Canada, Dr. Lossing as Chief of the Epidemiology Division of the Department of National Health and Welfare, has developed a most important service for the provincial departments of health in receiving and analyzing the reported cases and deaths from poliomyelitis and of studying the trend in the incidence of this disease in the light of the nation-wide vaccination program. The period of low incidence is the time when a Canada-wide intensive program of immunization should be in progress.

At least 75 per cent of individuals receiving three properly spaced doses of vaccine are protected against poliomyelitis. It is a personal protection and the individual's protection may not reduce the extent of the dissemination of polio viruses in communities. Recognizing these facts, federal and provincial public health authorities unanimously endorsed the administration of vaccine to all persons 40 years of age and under and to all pregnant women. As only a small percentage of paralytic poliomyelitis occurs in the age group over 40 years it was felt that, for the present, every effort should be concentrated on achieving the vaccination of the maximum number in the age-group under 40 years. It is of interest that there has been a shifting of the peak of paralytic poliomyelitis to the age-group under 5, presumably as a result of the vaccination of school children. The vaccination of pre-school children and of infants is an urgent responsibility. In all the provinces the first efforts have been made among school children and in many areas pre-school children have been reached.

Facing the problem of all persons under 40 years of age, Saskatchewan has commenced immunizing one quarter of a million adults including men and women born from 1917 to 1940 inclusive. At present, it is estimated that 80 per cent of children 16 years of age and under have received two or three doses of vaccine. In all child health centers in the organized health regions in

Saskatchewan infants and pre-school children are receiving poliomyelitis vaccine as part of the routine immunization program.

In Canada as a whole, it is estimated that 4,000,000 persons have received one or more doses of vaccine. The age-group under 40 years is estimated at 10,500,000. There remain between 6,000,000 and 7,000,000 persons who have not yet been afforded the privilege of vaccination. Canada can be pleased with the leadership of the federal and provincial departments of health and with the wholehearted participation of local health authorities and the medical profession in achieving in such a short period the vaccination of 4,000,000 persons in the face of limited quantities of vaccine.

The situation is now entirely different. There are adequate supplies of vaccine and there is no reason for delay in forwarding vaccination in every part of Canada. Today, we have a practical and effective means of combating poliomyelitis. When an epidemic occurs it is too late to vaccinate with the hope of reducing the incidence. This was the finding during the severe outbreak in Chicago last year when more than 1,100 cases occurred, 75 per cent of which were paralytic. More than 1,000,000 doses of poliomyelitis vaccine were given during the period of the epidemic. Dr. Herman N. Bundesen, Commissioner of Health, and his associates expressed the opinion that in spite of good vaccine acceptance it was not possible to achieve immunity levels sufficiently early to have a substantial impact on the outbreak. Vaccination during the epidemic was of value in that large numbers of persons who otherwise would not have requested vaccination received the benefits of future protection. It is of interest that confirmation of the opinion of public health authorities that vaccination is not contra-indicated during an epidemic is found in the analysis. There was no evidence to suggest that the administration of polio vaccine during an epidemic may precipitate cases of paralytic poliomyelitis.

In the presence of an epidemic, authorities and public alike are prepared to do everything that offers a hope of assistance in controlling the disease. In this period of low incidence the opportunity is ours to conduct a concerted, co-ordinated effort in every part of Canada. To be successful, the public must have full information. Our press, the Canadian Broadcasting Corporation, privately owned radio stations and voluntary health agencies have given invaluable assistance to the effort that has been made and will continue their support. Our Canadian medical profession stands ready to forward a Canada-wide program of vaccination and the control of paralytic poliomyelitis. Now is the time!

REGINALD MYERS ATWATER, A.B., M.D., Dr.P.H.

1892–1957

NEWS of the sudden passing of Dr. Reginald M. Atwater, Executive Secretary of the American Public Health Association, on Friday, October 18, brought sorrow and deepest regret from public health workers throughout Canada and from the Association's members on this continent. Following a mild cerebral accident a few weeks ago, he had recovered rapidly and was planning to be present at the Cleveland annual meeting. He suffered a second massive attack from which he failed to rally.

Dr. Atwater was elected Executive Secretary of the Association in 1935. Under his leadership the Association grew more in size and in capacity for service than in the earlier six decades of its history and now has a membership of more than 13,000.

As a highlight of the seventy-fifth birthday of the Association at the Atlantic City, N.J. meeting in 1947, Dr. Atwater received the William T. Sedgwick Medal, the highest honour which the American Public Health Association can confer. The presentation was made by the late Brigadier General James S. Simmons, Dean of the Harvard School of Public Health. In the citation General Simmons said: "His wisdom has been inspired by unflinching courage which has faced decisions without any fear of personal consequences. His firmness in matters of principle has been tempered by unfailing patience and by an essential humanity which has earned not only our respect but our personal affection. He has served the cause of public health with complete devotion and with a modesty that has often hidden the crucial part he has played in forming the program and policies of the organization." Truly, the award was for "Distinguished Service in Public Health".

Dr. Atwater was a teacher at the Hunan-Yale College of Medicine in Changsha, China, 1921–25, and at the Harvard School of Public Health, 1925–27. He was a health officer for eight years and directed the health demonstration at Cattaraugus County, N.Y. He was honoured by Cuba, being made Commander, Order of Carlo J. Finlay, in 1939 and by the Society of Medical Officers of Health of Great Britain.

As Executive Secretary, Dr. Atwater kept before the Association its international character, honouring members in Mexico, Cuba and Canada with membership in the major committees and including representatives among its officers. He was most generous in his assistance to the Canadian Public Health Association addressing the Association at its annual meetings in Halifax, Montreal, Toronto and Vancouver and sharing his rich experience in administration with the Association.

To Mrs. Atwater and the members of his family, who were personally known to a large circle of the Association's membership, the Canadian Public Health Association expresses deep appreciation of Dr. Atwater's rich life of service and extends its heartfelt sympathy.

Special Article

The Use of the Jamieson Test Kit in Restaurant Inspection

DAVID JACK,[1] M.Sc., P.Eng.

IT is agreed that the person charged with the task of sanitizing equipment in food and beverage establishments performs a highly important and difficult task. The removal of bacteria and organic matter which may affect the flavour of foods and, in some cases, spread disease among the patrons, is important. At one time a simple scientific method of measuring the success of efforts to provide clean dishes was not available. By present laboratory methods, 48 to 72 hours are required to indicate the effectiveness of the sanitary procedures used in dishwashing.

A simple and practical method to make restaurant and beverage room personnel realize the need for better sanitation developed from studies in the Department of Bacteriology and Animal Pathology, University of Manitoba, Winnipeg. This "seeing is believing" approach to sanitary control was carried out in several commercial establishments in Manitoba during the summer of 1945 under the direction of Professor M. C. Jamieson. Simplicity is the key to success in any method designed to convince non-technical personnel. Equipment must be easily transported. The actual procedure must appear reasonable. The results must be apparent to the people concerned. The gradings and records must be concise and self-explanatory.

The Jamieson Test Kit

The materials for making the test are supplied by the bacteriological laboratory. Thin, flat, screw-capped, one-ounce bottles are used for the medium in place of test-tubes because in the latter the medium dries too rapidly. These bottles are relatively cheap and very durable. To provide a surface for easy labelling with an ordinary lead pencil, one side of the bottle is sanded.

Each bottle requires only 4.5 mls. of medium to provide an effective slant surface. The all-purpose medium for bacteria, yeasts and moulds is the tryptone-glucose-extract-milk (T.G.E.M.) agar used for dairy products. To this is added 0.4 per cent Difco yeast extract, 1 per cent milk and 1 per cent agar. The heavy agar content provides a strong gel, permitting of considerable pressure when swabs are applied. After sterilization at 15 pounds pressure for 30 minutes, the medium is slanted by laying the bottle flat on the side closest to the sanded bevelled edge. At first, considerable loss resulted due to contamination apparently drawn into the tightly capped bottles while cooling. This was overcome by laying the bottles, hot from the autoclave, on towels soaked in a disinfectant solution, then tightly wrapping these towels about the bottles. Towels soaked in 10 per cent high molecular alkyl-dimethyl-benzyl-ammonium chlorides (Foccal) at a concentration of one ounce to three gallons of water have been found satisfactory. After solidification, the slants need considerable conditioning to dry the surface of the medium. The

[1]Supervising Engineer, Western Region, Public Health Engineering Division, Department of National Health and Welfare, Winnipeg, Manitoba.

dry surface grips the swab and serves to extract more material from it. Also, it reduces the tendency to develop spreader colonies. In a 37° C. incubator, with the caps loosened, this is accomplished effectively in three or four days. After tight sealing of the caps, these slants may be stored almost indefinitely.

Commercially prepared cotton-tipped applicators, cut to a four-inch length, packaged, folded and sterilized in glassine coin envelopes 4½ × 3 inches, have proved excellent for this test. Sterile water for moistening swabs is provided in a single bottle, similar to those for the medium, for each establishment visited. A special tray for holding these bottles securely while at work is an advantage.

For transport and ready use of the equipment, supplies and accessories, convenient travelling cases are available. One, loaded to capacity, proves a neat housing of the materials for the examination of twelve surfaces in each of nine establishments. This unit set on a table or counter, with one side opened down, is ideal for carrying out the test without disturbing the routine of the establishment. The only other equipment is a culture display rack one of which is left in each establishment. It is designed to hold 15 bottles in a manner facilitating proper growth of cultures and easy observation at all times.

The "Jamieson test" was not developed as a substitute for the standard plate count, as established by the United States Public Health Service, although studies showed that the grades used in conjunction with the "Jamieson Kit" compared favourably with the standards of that body. The use of the swab test was recommended to the United States Public Health Service in 1943 and a modification of the test was adopted by the Committee on Research and Standards of the American Public Health Association in 1944. The modified test prescribed that the upper half inch of the outer rim of cups and glasses and a total area of approximately 4 square inches in the case of forks, spoons, plates, etc., be swabbed. Tryptose glucose extract agar was recommended in plating. If the tubes or bottles containing this glucose extract are incubated in the laboratory, a 48-hour period is required at a temperature of 37° C. If the tubes or bottles which have been plated are left at the establishment where the test was carried out, they should be placed on a high shelf where the temperature is moderately warm and read in 48–72 hours.

How the Kit is Used

After the dishes and cutlery have been swabbed the media bottles are inoculated and left in a suitable warm place in the restaurant kitchen. A return visit is made after 48 or 72 hours and the results read in the presence of the management. The operator can be advised that the dishwashing and sterilization procedures are being performed satisfactorily or that corrective measures are necessary. The swab count must be less than 10 if the sanitizing operation is to be considered satisfactory. Where the contamination is high, it may be difficult to estimate the number of micro-organisms contaminating the surfaces of cutting knives, chopping blocks etc. The use of a "guide" may be helpful as it indicates accurately the surface area to be sampled. Some guides are made of medium gauge stainless steel and have a central opening of 1 × 4 inches (square, circular or rectangular). These stainless steel guides can be wrapped individually in paper and sterilized. If a portable "bottle-gas" burner is available the guides can be sterilized by flaming. If the surfaces to be examined are of irregular contour, the guides can be of malleable sheet foil, cellophane, plastic or paper.

If the cleaning is carried on efficiently micro-organisms should be absent. Their presence indicates improper washing and disinfecting or subsequent contamination. Such contamination may be caused from the workers' hands, the water supply or improper storage of the clean utensils. The hands of the operators handling the washed and sterilized utensils should be as clean as possible. Cleaning is rendered ineffective by indifference of the management and by operators taking too much for granted. Food prepared under unsanitary conditions is almost certain to contain filth, sometimes gross enough to affect flavour or appearance.

The following experiences indicate the value of the visual field test. Two establishments were visited. The first showed every sign of cleanliness in the storage, preparation and serving of food. The dishwashing appeared to be quite satisfactory as was the storing of the clean dishes and utensils. Swab tests were made and the media bottles left in the restaurant.

The second kitchen reflected carelessness and poor housekeeping. The operator used a good sterilizing agent, followed the instructions on the container and seemed unaware that his establishment did not present a very pleasing appearance. Again, swab tests were made on various types of dishes and cutlery and the media bottles left with him.

On returning to these establishments after the proper lapse of time, surprising results were forthcoming. According to the swab tests, the first establishment was either not using a good sterilizing agent or an insufficient quantity of it, or the storage and the handling of dishes afterward were not as efficient as first appeared. Further investigation revealed that the sterilizing agent being used had been left over from the previous season, probably had been frozen and on further testing, indicated poor sterilization properties. The management was aghast at the results and immediately replaced the sterilizing agent and reorganized the dishwashing department. Two weeks later this establishment was again visited and the swab test results were satisfactory.

In the second establishment the swab smears indicated that dishwashing and disinfecting were entirely satisfactory. On further investigation, it was found that the operator was using about 50 per cent more sterilizing or sanitizing agent than necessary. This establishment was visited a few weeks later and evidently the operator had taken the advice because the establishment was very clean and in good sanitary condition.

The Jamieson Test Kit has its limitations. Many food establishments are located where duties of the investigator do not permit him to return in 72 hours. A 48-hour period may give an indication of the efficiency of the sterilization of utensils. Although methods have been proposed to shorten further the time interval, none have been devised since all tests require sufficient cell multiplication to yield direct visual evidence either of colonies or production of gas.

The use of radioactive isotopes has been studied by Levin, Harrison and Hess in the United States during the past year. It is of interest to note that Levin *et al.* have developed a simple presumptive test for coliform organisms, employing radioisotope C14, in which findings are obtained in one hour.

ASSOCIATION NEWS

Alberta Division

The annual convention of the Alberta Division was held in the MacDonald Hotel, Edmonton, on September 5 and 6, 1957. Civil Defence was the underlying theme of the program and the division was fortunate in having Dr. F. E. Pace, Medical Consultant to the Special Weapons Section of Civil Defence Health Services, as guest speaker from Ottawa.

Highlight of the convention was the election of the Hon. Dr. W. W. Cross as a life member of the Alberta Division of the Association on the occasion of his retirement as Minister of Health.

Appointments to the executive for 1958 include Dr. D. N. Keys as President, Mr. W. A. Milligan as Vice-President, Miss Velma Daye as Secretary, Miss Irene Stewart as Treasurer, Dr. S. P. C. Casey as Chairman of the Medical Officers, Miss Blodwen Cogland as Chairman of the Public Health Nurses, and Mr. J. R. Wocks as Chairman of the Sanitary Inspectors. The next convention is to be held in Red Deer.

Laboratory Section—Annual Meeting

This is an anniversary year. The twenty-fifth annual meeting of the Laboratory Section will be held at the King Edward Hotel in Toronto on December 9 and 10, 1957. The Laboratory Section had its beginning in December 1932 and, with the exception of one war year, has continued to meet annually since that time. Because of the season, the term "Christmas Meeting" soon became popular. This year marks a milestone—a quarter-century of such meetings—and as one casts his mind back over the years a great record of change, development and emphasis becomes crystal clear from the program materials. The staphylococcus illustrates the pattern particularly well with, at first, the great interest in its toxins, followed by the developments relating to food poisoning, bacteriophage typing, the introduction of antibiotics and now the serious problems of antibiotic resistance. The virus story, of course, is another striking example. In 1932, there were perhaps still some doubters on the question of "Elementary Bodies" as virus agents, whereas over the past few years "new" viruses have been isolated at a dizzy pace.

Surveyed in this perspective, the Christmas Meeting has provided an unique opportunity for Canadian laboratory workers to gather together for the exchange of information and ideas in rapidly changing and developing fields. The next twenty-five year period should be no less fruitful.

A list of the papers to be presented during the 1957 meeting appears in this issue. The papers cover a wide range of interesting topics.

At the anniversary luncheon on Monday, December 9, Dr. C. A. Wicks, Medical Superintendent, Toronto Hospital for Tuberculosis, will present an address entitled "A Flying Visit to India". Dr. Wicks attended the Fourteenth Conference of the International Union Against Tuberculosis which met in New Delhi last January.

We hope as many members as possible will plan to attend the annual meeting and a special invitation is extended to those who were present at the first meeting, the "charter members".

TWENTY-FIFTH ANNUAL MEETING OF THE LABORATORY SECTION

DECEMBER 9 and 10, 1957
KING EDWARD HOTEL, TORONTO

PAPERS TO BE PRESENTED

Chemotherapy of Experimental Tuberculosis with Hydrazone 377.
C. O. SIEBENMANN, Connaught Medical Research Laboratories, Toronto.

Electron Microscope Study of the Effects of Penicillin on the Cell Wall of Micrococcus pyogenes.
R. G. E. MURRAY, W. H. FARNCOMBE and B. H. MAYALL, University of Western Ontario, London.

The Detection of a Typhoid Carrier by the Use of Gauze Swabs.
E. J. BOWMER, Director, Division of Laboratories, Vancouver.

A Human Outbreak of Psittacosis Due to Infected Turkeys in a Poultry-Processing Plant.
E. J. BOWMER, Director, Division of Laboratories, Vancouver.

Antibiotics and Sanitation in Relation to the Microbiology and Preservation of Poultry Meat.
G. W. ANDERSON, D. A. SILVESTRINI and E. S. SNYDER, Department of Bacteriology, Ontario Agricultural College, Guelph.

Aseptic Meningitis in Manitoba in 1957.
J. C. WILT, Department of Bacteriology and Immunology, University of Manitoba, Winnipeg.

Tissue Culture Methods in the Study of Infections caused by the Herpes Simplex-Varicella Group of Viruses.
MAIRIN CLARKE, FRANCES W. DOANE, NORMA DAVIS, R. M. EHRLICH and J. A. TURNER, The Hospital for Sick Children, Toronto.

The Use of Tube and Plate Agglutination Tests in the Diagnosis of Leptospirosis in Cattle.
PAUL BOULANGER, Animal Diseases Research Institute, Hull.

Staphylococcal Infections and Antibiotic Therapy—a Four Year Study in One Hospital—Development of Resistance Correlated with Prevalence of Use of Five Antibiotics.
D. H. STARKEY, Queen Mary Veterans Hospital, Montreal.

Epidemiological Investigations on Ringworm in Eastern Quebec (Gaspe).
F. BLANK, Department of Bacteriology and Immunology, McGill University, Montreal.

The Enterobacterial Hemagglutination Test as a Tool for Etiologic Diagnosis of Intestinal Infections.
ERWIN NETER, Children's Hospital and Departments of Bacteriology and Pediatrics, University of Buffalo, School of Medicine, Buffalo, N.Y.

Penicillinase Studies.
M. GOLDNER, Connaught Medical Research Laboratories, Toronto.

The Effect of Combinations of Streptomycin and Chloramphenicol on Escherichia coli.
N. A. HINTON and J. H. ORR, Queen's University, Kingston.

Typing of Cultures of S.typhi from a Carrier Harbouring Types E1 and E8.
J. M. DESRANLEAU and IRENE MARTIN, Ministry of Health, Montreal.

In vitro Inhibition of Streptomycin Activity on M. Tuberculosis H 37 Rv.
O. MORGANTE, Alexandra Hospital and McGill University, Montreal.

Antigenic Relationships of Acid-fast Bacteria, Including Chromogenic Strains.
E. MANKIEWICZ, Royal Edward Laurentian Hospital and McGill University, Montreal.

Some Public Health Aspects of the Preservation of Meats by Gamma-irradiation.
I. ERDMAN, K. M. McQUEEN and F. S. THATCHER, Food and Drugs Laboratories, Department of National Health and Welfare, Ottawa.

Bacteriological Content of Precooked Frozen Foods in Relation to Public Health.
A. DOREEN ROSS, Food and Drugs Directorate, Department of National Health and Welfare, Ottawa.

Reducing H Antigenicity of E. coli Strains for OB Antiserum Production.
A. E. KELEN, Division of Laboratories, Ontario Department of Health, Toronto.

Report on the Isolation of Toxoplasma from Mink.
J. T. PRIDHAM, Department of Pathology and Bacteriology, Ontario Veterinary College, Guelph.

Clinical Analysis of the Lipids of Five Substrains of Mycobacterium tuberculosis var. BCG.
VINCENT PORTELANCE, Institute of Microbiology and Hygiene, Montreal.

NEWS NOTES

Federal

In a letter to the director of civic affairs of the Calgary Junior Chamber of Commerce, the Minister of National Health and Welfare, Hon. J. Waldo Monteith, stated that "the Department of National Health and Welfare is confident that, as the facts become more widely known, fluoridation will come to be recognized as an important landmark in the long quest for control of tooth decay." The letter, made public October 1, noted that any decision on fluoridation rests with the community concerned.

D. Kubryk, M.D., D.P.H., Montreal, formerly command hygiene officer with the Quebec Command of the Canadian Army, has been appointed a medical officer in the Epidemiology Division, Department of National Health and Welfare. Dr. Kubryk studied medicine in France and Italy and engaged in general practice in England before joining the Canadian army in 1952. He took his diploma in public health at the University of Montreal in 1956.

Dr. B. D. B. Layton, principal medical officer in charge of Research Development and International Health, Department of National Health and Welfare, was the Canadian observer at the meetings of the directing council of the Pan American Sanitary Organization in Washington, D.C., late in September. The directing council acts as the WHO regional committee for the Americas.

Herbert Dorken, Ph.D., consultant in psychology, mental health division, Department of National Health and Welfare, attended the conference of state chief psychologists in New York City late in August and later presented a paper at a meeting of the American Psychological Association.

The twenty-third meeting of the Canadian Council on Nutrition since its formation 20 years ago was held in Ottawa October 7–8. This was preceded by a two-day meeting of the Dominion-Provincial nutrition committee of the Council. Dr. L. B. Pett, chief, nutrition division, Department of National Health and Welfare, was chairman of both meetings.

Dr. H. K. Brown, consultant in dental health, Department of National Health and Welfare, attended the meeting of the Fédération Dentaire Internationale in Rome, Italy, from September 6–14. Dr. Brown also visited WHO headquarters in Geneva and consulted with dental officers of the British Ministry of Health in London.

Mrs. Brigitta L. Balla, B.A., M.S.W., Vancouver, formerly on the staff of the citizenship branch, Department of Citizenship and Immigration, has joined the nutrition division, Department of National Health and Welfare, where she will study the sociological aspects of what Canadians eat and why. Mrs. Balla, a graduate of the University of British Columbia's School of

Social Work, has had several years' experience in child welfare and research.

Hospital construction grants recently approved under the National Health Program include: *British Columbia*—Vancouver General Hospital, laboratory, $64,506; Lady Minto Gulf Islands Hospital, Ganges, $29,590; Nechako Valley Health Clinic, Vanderhoof, $5,217; Castlegar and District Hospital, $41,923; *Alberta*—Drayton Valley Municipal Hospital, $18,500; Cardston Municipal Hospital, $34,250; Bow Island Municipal Hospital, $23,250; John Neil Hospital, Cold Lake, $23,000; *Saskatchewan*—Rabbit Lake Union Hospital, $12,913; Providence Hospital, Moose Jaw, $4,330; Paradise Hill Union Hospital, $4,435; *Manitoba*—Manitoba School for Mentally Defective Persons, Portage la Prairie, $57,338; Victoria-South Norfolk-Treherne Hospital, Treherne, $32,870; *Ontario*—Kingston General Hospital, $4,953; Niagara Peninsula Sanatorium, St. Catharines, $10,640; South Waterloo Memorial Hospital, Galt, $25,913; *Quebec*—Hôpital St. Jean, St. Jean, $6,113; Hôpital Notre Dame de Chartres, Maria (Bonaventure County), $42,000.

Alberta

The retirement has been announced of the Hon. Dr. W. W. Cross as Minister of Health of Alberta. Dr. Cross had held the portfolio of Health continuously since 1935. He was responsible for the introduction of much original legislation in the field of hospitalization and medical care. Dr. Cross has been succeeded by the Hon. Dr. J. Donovan Ross who took oath as Minister of Health on September 18. Dr. Ross is a graduate of the University of Alberta and he holds the rank of Surgeon Commander in the Royal Canadian Navy. He was actively engaged in medical practice in Edmonton until the retirement of the Hon. Dr. Cross.

Dr. John B. Sherman, a graduate of the University of Melbourne, has been appointed medical officer of health to the Peace River Health Unit. Dr. Sherman holds the Diploma in Industrial Health of the English Royal Colleges and is now taking the Diploma in Public Health course at the School of Hygiene, University of Toronto.

Dr. Ivor Lewis of Chesterfield, England, has been appointed medical officer of health to the recently formed Edson Health Unit. Dr. Lewis is a graduate of the University of Aberdeen and obtained his Diploma in Public Health from the University of Leeds.

Saskatchewan

Miss Doreen Andrews, B.Sc., has been appointed director of the Nutrition Division of the Saskatchewan Department of Public Health. Born and educated in Winnipeg, she comes to the department with experience as a dietitian, chemist in a food control laboratory and home economist with a television station.

The Regina Rural Health Region is now in the process of developing its Rheumatic Fever Program. This follows the successful operation of such a program in five other Saskatchewan health regions. The program in the health regions runs on the same general plan: the Department of Public Health supplies the free penicillin, the regional medical health officer supervises the program, the public health nurse does the follow-up work. The whole scheme works with the close co-operation of a committee of the district medical society and the family doctor.

The growing industrialization of Saskatchewan and particularly the great increase in mining has led the Department of Public Health to establish an Occupational Health Division with the appointment of Dr. Norman Williams as director. Dr. Williams holds the diploma in public health and industrial medicine.

The Honourable J. Walter Erb, the Minister of Public Health, has announced the establishing of Saskatchewan's ninth health region, the Yorkton Health Region, following the request of a large number of rural, town and village municipalities. This newest health region will contain 27 rural municipalities, 1 city, 8 towns, and 44 villages.

Travelling on a Rockefeller Foundation grant, Mr. Sigifredo Martinez, Assistant Director for Administrative Affairs of the Division of Hospitals of the Department of Health, Puerto Rico, recently spent two weeks with the Department of Public Health. Mr. Martinez was particularly interested in various aspects of hospital care and administration, regional preventive and medical care programs, as well as other features of public health in Saskatchewan.

Manitoba

At the annual convention of the Canadian Institute of Sanitary Inspectors recently held in Vancouver, Mr. Mark Flattery, Senior Sanitary Inspector, was presented with life membership. He is a charter member of the organization. Mr. Flattery has been with the department since 1930 and during that time has held many positions on the executive of the Manitoba Public Health Association. This is the first time that such an honour has been given to Manitoba since the health and

public welfare department was organized.

Dr. Shirley Parker has been appointed medical director at the Red River Health Unit, Steinbach.

Dr. William Marshall, medical director of the Virden Health Unit has left for Toronto to take the Diploma in Public Health course at the School of Hygiene.

Dr. Jules Sicotte has become medical director at the Portage la Prairie Health Unit.

Miss Ethel Martens has returned from a year of study at the University of California having completed her Master of Public Health degree. Miss Martens is now stationed at Selkirk.

Dr. Eric Benson of Bristol, England, has become medical director at Flin Flon.

The Director of Extension Health Services, Dr. M. Cleghorn, has instituted a rheumatic fever prevention program whereby children and adolescents who have had an attack of rheumatic fever will receive a continuing supply of oral penicillin without charge. It has been agreed that doses will be provided through the municipalities who will share the cost equally with the provincial government. Dr. Cleghorn and his committee, comprising Dr. Medovy, Dr. Beamish and Dr. Brownell, plan a follow-up questionnaire to evaluate the worth of the program and to obtain more data on rheumatic fever in the province.

Ontario

Honourable Mackinnon Phillips, Minister of Health, officiated at the cornerstone-laying ceremonies of two new wings of the Ontario Hospital, Brockville, recently. With the completion of these new units the bed capacity of this hospital will be 1,536, an increase of 280 beds.

The Norfolk County Health Unit, Simcoe, with Dr. J. R. Mayers as Director and Medical Officer of Health was opened recently. This new unit will be the thirty-second in the province.

Representatives of the Ontario Department of Health officiated at opening ceremonies of a new Ontario Hospital in North Bay on October 15. There are now 18 provincial mental hospitals in Ontario. The new hospital presently has a total of 754 beds and comprises also a nurses' home, administration building, power house and laundry. When the completed hospital is in operation, it will provide 1,300 beds.

A new plan to provide free dental care to families in receipt of mothers' allowances and direct relief has been announced by the Ontario Government. The scheme will be administered by the Royal College of Dental Surgeons of Ontario and will be financed by the provincial government. Under the dental care plan, children under 18 who are members of families receiving mothers' allowances or direct relief will be entitled to treatment by the dentist of their choice at home or at his office. A card entitling them to this service will be issued to each such family. In mothers' allowances cases, the province will pay the entire cost. In direct relief, the province and the municipalities will share it.

The city of Hamilton is particularly proud of its record in providing free Salk vaccine to pre-school and school-age children. The Hamilton Board of Education, by agreement with the Ontario Department of Health, has completed a year of exceptional activity resulting in approximately 75 per cent of pre-schoolers having at least two injections and 70,000 high school students having received two also. The elementary schools which began the program in 1955 with grades 1, 2 and 3, report that about 35,000 children have received the three injections.

Nova Scotia

Miss Roberta Devereaux, a recent graduate from the Eastman Dental Dispensary, a school for dental hygienists, joined the Department of Health staff on September 3, 1957. Miss Devereaux will be employed in the Fundy Health Division. We now have four dental hygienists employed in this province. They carry on a preventive dental health program with the pre-school and school children in the elementary grades (1–6).

During the last week in August we were privileged to have a visit from Miss Esther Robertson, R.N., Consultant to the Division of Maternal and Child Health, Department of National Health and Welfare. Miss Robertson observed in the maternity sections of some of our larger hospitals, in our prenatal classes and child health conferences and accompanied some of our nurses on their home visits in our rural areas.

Miss Elizabeth O'Connell was appointed staff nutritionist on October 7, 1957. Miss O'Connell is a graduate in Home Economics from Mount Saint Vincent College, Halifax, and took her dietetic internship at Saint Michael's Hospital, Toronto. She will be working in the Atlantic and Lunenburg-Queens Health Divisions. The staff of Nutrition Division now numbers five nutritionists, in addition to Miss Margaret Sherry, a graduate of the University of British Columbia, who has been granted a federal health bursary to study at the School of Hygiene, Toronto.

Books and Reports

THE NEW PUBLIC HEALTH, by Fred Grundy, M.D., M.R.C.P., D.P.H. Published by H. K. Lewis & Co. Ltd., London, W.C.1. Fourth edition, 1957, 214 pp. 18s.

Dr. Grundy is Professor of Preventive Medicine in the University of Wales. For many years he held a senior appointment in the field of local health administration. In 1944, he published "A Handbook of Social Medicine" based mainly on a course of lectures which he had given regularly to pupil midwives. Subsequent editions were published to outline and explain health services introduced by the Health Services Act. In 1948, Dr. Grundy entitled the book "The New Public Health". It was intended primarily as an introduction for midwives, health visitors and social workers generally. The fourth edition is a further revision and includes the latest amendments in legislation. The number of editions through which this book has passed indicates that it is meeting a very real need in Great Britain and that Dr. Grundy has succeeded in writing a very readable book.

WHEN YOUR CHILD IS ILL, by Samuel Karelitz, M.D. Published by Simon and Schuster, New York, 1957. 485 pp. $4.95.

In the course of his practice in paediatrics in the past 30 years, the author discovered that parents want more detailed, exact information about their children's illnesses than can be found in the available books. Part I of the book presents allergies, viruses, fevers, the wonder drugs, immunization and hygiene with a series of questions and answers relating to each of these subjects. Part II presents the acute communicable diseases, part III, respiratory diseases and related conditions, part IV, the nervous system, part V, intestinal diseases. Each chapter presents sub-headings such as symptoms, treatment and complications, and is followed by questions and answers. This plan is highly effective in supplying to the reader the authoritative findings of modern medicine. At the back of the book is an extensive glossary of terms which will be of invaluable assistance to parents. It will be appreciated in health departments, particularly by public health nurses.

DICTIONARY OF MICROBIOLOGY, by Morris B. Jacobs, Maurice J. Gerstein and William G. Walter. Published by D. Van Nostrand Company, (Canada) Limited, Toronto. 1957. 276 pp. $7.25.

This book supplies the widest variety of information on more than 5,000 individual items. Described are the most important bacteria, viruses, rickettsiae, yeasts, molds, and protozoa. Covered in detail are the important culture media and culture methods, stains, diagnostic tests, names of chemical substances, enzymes, and related information. For biochemists, industrial chemists, sanitary engineers as well as many other scientists, students and teachers, this volume will prove invaluable. Medical secretaries will welcome this book.

EVALUATION OF THE 1954 FIELD TRIAL OF POLIOMYELITIS VACCINE, Final Report, by Dr. Thomas Francis Jr. and Associates, Poliomyelitis Vaccine Evaluation Center, University of Michigan, Ann Arbor, Michigan, 1957, 563 pp.

The field trial of poliomyelitis vaccine, Salk, in 1954 was initiated and organized by the National Foundation for Infantile Paralysis, New York. It was guided and evaluated by the Poliomyelitis Vaccine Evaluation Center which was established at the request of the National Foundation for Infantile Paralysis as an impartial, independent organization in the University of Michigan. Publication of the final report marks the conclusion of this epoch-making study. It is the report of the largest trial of a medical product ever made and in spite of the magnitude of the undertaking, the work stands unchallenged. It was planned with meticulous care and conducted with thoroughness which made possible the satisfactory evaluation of the findings. In the introduction, Dr. Francis speaks of a certain pride of accomplishment. "There is satisfaction in the performance of the Vaccine Evaluation Center and some surprise that the evaluation of such a large experiment could be done so efficiently in the presence of so many imponderables and potential pitfalls. There is confidence in the quality of the data, in the unbiased character of the extensive analyses and their presentations, in the dependability of the conclusions even though some questions remain to which the data did not provide clear-cut answers. There is great assurance that the study, both in design and performance, is a contribution of major value to the field of medical research, generally. It is gratifying that the undertaking provided knowledge which unequivocally established the product developed by Dr. Salk as an effective vaccine for the prevention of poliomyelitis."

This report will remain as a model to those who may have a similar privilege in evaluating a new preventive or therapeutic agent. To Dr. Francis and his associates and to the National Foundation for Infantile Paralysis, public health workers throughout the world are indebted for this authoritative study presenting the evidence of the preventive value of Dr. Salk's great discovery of poliomyelitis vaccine.

ALCOHOLISM AND NURSING

R. Margaret Cork

Reprints of this paper, which appeared in the September 1957 issue of the Journal, may be obtained from:

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Toronto 6, Ontario